

EOSDIS Core System Project

Verification Specification for the ECS Project

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Final

February 1995

Hughes Applied Information Systems
Landover, Maryland

Verification Specification for the ECS Project

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CDRL Item 065

SUBMITTED BY

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Preface

This document is a formal contract deliverable with an approval code 1. It requires Government review and approval prior to acceptance and use. Changes to this document shall be made by document change notice (DCN) or by complete revision.

This document is under ECS Project Configuration Control. Any questions should be addressed to:

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Abstract

This Verification Specification (DID 403) contains summaries of release contents/capabilities, the full/partial Level 3 requirements necessary to fulfill each release, the process of managing and tracking these requirements, and the mapping of these requirements to System and Acceptance testing.

Keywords: *acceptance, build, capabilities, management, mapping, release, requirements, requirement category, scenario, system, test, thread, traceability, verification.*

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1. Introduction

1.1 Identification

This document is submitted as required by CDRL item 065 DID 403, whose requirements are specified in this document as a required deliverable under the Earth Observing System Data and Information System (EOSDIS) Core System (ECS) contract (NAS5-60000).

1.2 Scope

This document stipulates the specific portions or functions of the system design requirements to be verified by each of the tests and analyses in both Interim Release 1 and Release A volumes of the ECS System Integration and Test Plan (DID 402) (SITP) and the ECS Acceptance Test Plan (DID 409) (ATP). It also specifies the verification methods as discussed in the ECS Verification Plan (DID 401).

1.3 Purpose

The purpose of the ECS Verification Specification document is to identify the verification methods and assigned tests, both system and acceptance, used to verify each requirement. This document includes a description of the Requirements and Traceability Management (RTM) tool employed to trace requirements and matrix tables containing the requirements that must be met in IR1 and Release A. These matrix tables include requirement id's, requirement text, assignment to requirement categories, identification of the verification methods discussed in greater detail in the ECS Verification Plan(DID 401), the SITP test assignments and the ATP test assignments.

1.4 Status and Schedule

This version of the document, due two weeks prior to the Program Design Review (PDR), specifically includes the requirements to be satisfied in IR1 and Release A. As an approval code 1 document, the Verification Specification document requires Government approval prior to its acceptance and use.

1.5 Document Organization

The document is organized into eight sections, three appendices, plus an acronym list and glossary.

Section 1 - Introduction, describes and identifies the Verification Specification.

Section 2 - Related Documentation, identifies the parent documents and information documents as they relate to the Verification Specification.

- Section 3 - Requirements Management, describes the Requirements and Traceability Management tool employed to track and manage the ECS requirements, summarizes the decomposition of requirements, discusses the relationship between requirements and System/Acceptance Test cases, and defines the System/Acceptance Test coding standards for test scenarios, test sequences, and test cases.
- Section 4, - Interim Release 1 Requirements
through
- Section 8, - Release D Requirements, a summary of the Release contents, and a Requirements Matrix containing: Requirement Source IDs, extracted from the Requirements-by-Release class; Requirement Text, a detailed summary of the requirement; Requirement Category, mission critical, mission essential, or mission fulfillment; Verification Method, test, demonstration, inspection, or analysis; System Test Assignments, and Acceptance Test Assignments will be included in each section.
- Appendix A - contains a table listing of all Interim Release 1 System Test Codes, corresponding SITP Volume 1 paragraph IDs, Test Sequence Titles, and Test Case Titles.
- Appendix B - contains a table listing of all Release A System Test Codes, corresponding SITP Volume 2 paragraph IDs, Test Sequence Titles, and Test Case Titles.
- Appendix C - contains a table listing of all Acceptance Test Codes, corresponding ATP paragraph IDs, Test Sequence Titles, and Test Case Titles.

2. Applicable Documents

2.1 Parent Documents

The parent document is the document from which this Verification Specification scope and content are derived. The following documents are parent to the test processes and procedures addressed in this document.

423-41-02	Goddard Space Flight Center, Functional and Performance Requirements Specification for the Earth Observing System Data and Information System (EOSDIS) Core System (ECS)
423-10-01-01	Goddard Space Flight Center, Earth Science Data and Information System (ESDIS) Project -- Level 2 Requirements

2.2 Applicable Documents

The following documents are referenced within this Verification Specification, or are directly applicable, or contain policies and directive matters that are binding upon the content of this volume.

194-207-SE1-001	System Design Specification for the ECS Project
222-TP-003-005	Release Plan Content Description Technical Paper
423-41-01	Goddard Space Flight Center, EOSDIS Core System Statement of Work

2.3 Information Documents

The following documents are referenced herein and, amplify or clarify the information presented in this document. These documents are not binding on the content of the ECS Verification Specification.

194-401-VE1-002	Verification Plan for the ECS Project
402-CD-001-002	System Integration and Test Plan for the ECS Project Volume 1: Interim Release 1 (IR-1)
402-CD-002-001	System Integration and Test Plan for the ECS Project Volume 2: Release A
409-CD-001-003	Overall System Acceptance Test Plan for the ECS Project TRMM Release

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3. Requirements Management

3.1 Requirements and Traceability Management Tool

This section describes the process of tracking and managing requirements within ECS. The Requirements and Traceability Management (RTM) tool has been selected by the ECS project to aide in this tracking process. RTM provides the means to record all relationships and dependencies between requirements, documentation, releases, services, and, in this case, test specifications.

RTM assists systems engineers in defining requirements, assigning them to release, and mapping them to formal test cases. The current top-level structure of the RTM data base is shown in Figure 3-1. Requirements allocation flows from left to right, Level 2 (L2) to Level 4 (L4), within the diagram. Each class of requirements represents a further level of specificity and allocation to lower level design components or releases. The primary RTM classes are as follows:

- **Level 2 (L2).** Contains requirements specified in Level 2 - Volume 1 and Volume 0.
- **Level 3_FPRS (L3_FPRS).** Contains functional and performance requirements specifications received form GSFC 07/94 (423-41-02)
- **Requirements-by-Release.** Contains requirements expanded from L3_FPRS and IRD that are to be delivered in each release and with assigned requirement category: mission critical, mission essential, or mission fulfillment. These requirements are used by development engineers to develop the Level 4 requirements.
- **Level 4 (L4).** Contains Level four requirements expanded from Requirement-by-Release class. In this level, requirements are allocated to subsystems of each of the elements in the segment. The Segment/Element Requirements Specification (DID 304) contains these requirements.
- **IRD.** Contains external interface requirements specified in Interface Requirements Documents (IRDs). These requirements are mapped to requirements in the L3-FPRS class and will be used to populate the Requirements-by-Release class.

Also contained within the RTM Class Definition Diagram (Figure 3-1) are three test classes:

- **Segment Test (Seg_Test).** Contains segment build/thread test cases which will be mapped to requirements in Level 4 class. These test cases are documented within the Segment/Element Integration and Test Plan (DID 319).
- **System Test (System_Test).** Contains system build/thread test cases which will be mapped to requirements in the Requirements-by-Release class. These test cases are documented within the System Integration and Test Plan, volumes 1&2 (DID 402).

- **Acceptance Test (Acc_Test).** Contains scenario based test cases which will be mapped to requirements in the Requirements-by-Release class. These test cases are documented within the Acceptance Test Plan (DID 409).

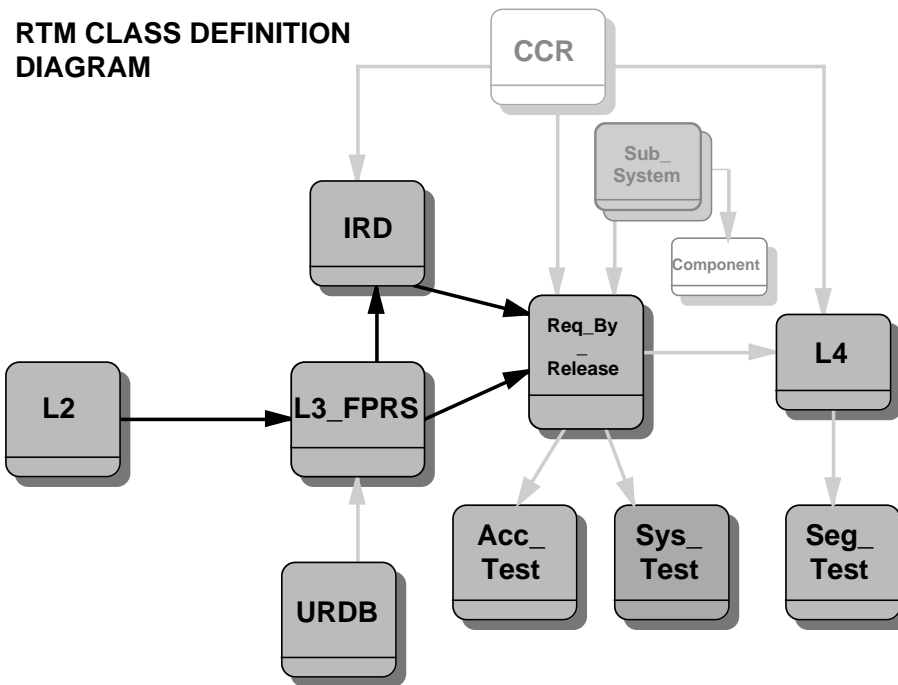


Figure 3-1. RTM Class Definitions Diagram

3.2 Requirements-by-Release

The primary set of ECS requirements are the Level 3 requirements documented in the Functional and Performance Requirements Specification for the ECS (423-41-02). This section discusses the process of analyzing the individual Level 3 requirements and expanding them into the Requirements-by-Release class.

The process of decomposing Level 3 requirements to Requirements-by-Release may result in some clarification, but does not add 'new' requirements into the RTM system. This decomposition is used to track Level 3 requirements to specific releases, and to system and acceptance test cases. An example of a Level 3 requirement and its expanded Requirements-by-Release counterparts is illustrated below:

Level 3 Requirement

DADS0901 states -

The DADS element shall collect the management data used to support the following system management functions:

- a. Fault management
- b. Configuration management
- c. Accounting management
- d. Accountability management
- e. Performance management
- f. Security management
- g. Scheduling management
- h. Distribution and Ingest management

Requirements-by-Release

Interim Release 1:

DADS0901 states -

The DADS element shall collect the management data used to support the following system management functions:

- e. Performance management
- f. Security management

Release A:

DADS0901 states -

The DADS element shall collect the management data used to support the following system management functions:

- a. Fault management
- b. Configuration management
- d. Accountability management
- e. Performance management
- f. Security management
- g. Scheduling management
- h. Distribution and Ingest management

Release B (and C and D):

DADS0901 states -

The DADS element shall collect the management data used to support the following system management functions:

- a. Fault management
- b. Configuration management
- c. Accounting management

- d. Accountability management
- e. Performance management
- f. Security management
- g. Scheduling management
- h. Distribution and Ingest management

As the requirement progresses throughout releases, the previous functionality is carried over to the next release for regression purposes. From the example, ECS will only perform sub-sets e and f of requirement DADS0901 in IR1, whereas in Release A, ECS will perform sub-sets a,b,d,g, and h along with e and f of DADS0901. The same is true for the transition to Release B from Release A. This requirement decomposition shows that no functionality is lost from release to release.

Each of the expanded requirements within the Requirements-by-Release class is also allocated a verification method: test, demonstration, inspection, or analysis (defined in Table 3-1), and a requirement category: mission critical, mission essential, or mission fulfillment (defined in Table 3-2).

3.3 Requirements Verification Mapping

The expansion of requirements into the Requirements-by-Release class assists the System Integration and Test (SI&T) team and Acceptance Test team in mapping test procedures/scenarios to individual functions or services. The expanded requirements contained in the Requirements-by-Release class hold a direct mapping to system builds and threads and acceptance test scenarios (shown in Figure 3-2).

3.3.1 Segment Test

The verification and test of the Level 4 requirements, listed in the Segment/Element Requirements Specification (DID 304), is documented in the Segment/Element Integration and Test Plan (DID 319). The Segment Test Class (Seg_Test, Figure 3-1) contains the segment build/thread test cases which are be mapped to requirements in the Level 4 class (L4, Figure 3-1).

3.3.2 System Integration and Test (SI&T)

System integration and test activities are performed by the System I&T organization. In general, the SI&T organization integrates and tests system functions in system threads and combines these threads into system builds. Each system build is tested, and merged with other system threads and/or other tested system builds into higher-level system builds. This process is repeated until the complete release is integrated and tested. Since each system build/thread is mapped to Requirements-by-Release requirements, and system test cases are mapped to system build/threads, the SI&T organization is able to verify that all Level 3 requirements related to the release are satisfied.

Table 3-1. Definition of Verification Methods

Verification Method	Verification Definition
Inspection	The visual, manual examination of the verification item and comparison to the applicable requirement or other compliance documentation, such as engineering drawings.
Analysis	Technical or mathematical evaluation based on calculation, interpolation, or other analytical methods.
Demonstration	Observation of the functional operation of the verification item in a controlled environment to yield qualitative results without the use of elaborate instrumentation, procedure, or special test equipment.
Test	A procedure or action taken to determine under real or simulated conditions the capabilities, limitations, characteristics, effectiveness, reliability or suitability of a material, device, system or method.

Table 3-2. Definition of Requirement Categories

Requirement Category	Examples of Requirement Type
<u>Mission Critical Requirements</u> : Define functions necessary to protect ECS critical assets, e.g., the EOS platforms and instruments and the lowest level, irreplaceable data. Functions assure no loss of data and the capability to generate higher level data products.	<ul style="list-style-type: none">• spacecraft instrument control, operations and backup, etc., to assure data gets to ground.• data capture, Level 0 processing, data delivery to DAACs, ingest of data to archive, Level 1a/1b processing, ability to find/access data for subsequent processing
<u>Mission Essential Requirements</u> : Provide basic services for long term data storage, data management necessary to serve the user community and the majority of earth science researcher service needs and data distribution needs.	<ul style="list-style-type: none">• on-demand or routine production of standard data products• basic search, order, and subsetting services• basic accounting services• external agency linkage to standard support products
<u>Mission Fulfillment Requirements</u> : Advanced services targeted at increasing the earth science user's productivity. These include services to meet larger programmatic goals; provide intermediary support of educational, policy, and social services communities; and provide services for access to GCDIS and UserDIS.	<ul style="list-style-type: none">• user implemented methods• user services to support analysis linkages• GCDIS expansions• external agency and international linkages to support user research and non-production dependent calibration• user-as-a-DAAC linkages so EOSDIS includes a user-DAAC• software support to GCDIS/UserDIS implementors

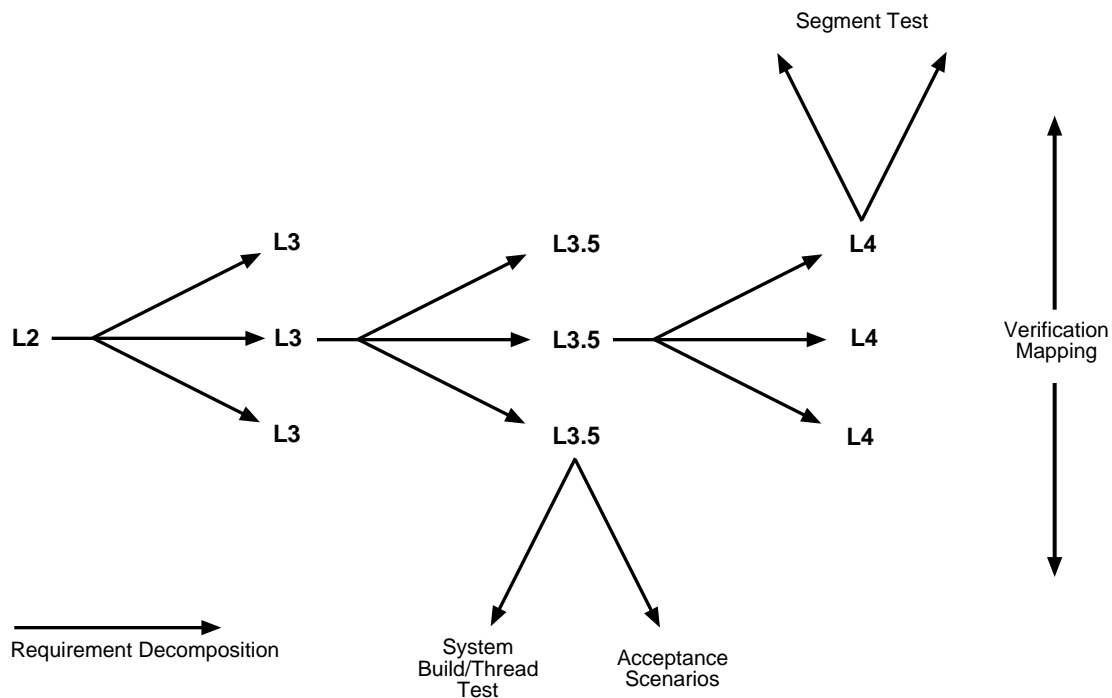


Figure 3-2. Requirements Mapping and Verification

3.3.3 Acceptance Test Scenarios

Test scenarios provide the basic framework for ECS system-level acceptance testing. These scenarios describe a representative, chain of events that entail science user and operations interactions with the ECS. They are modeled as stimulus/response patterns which form a logical sequence of operations. By using scenarios in acceptance testing, events that would occur during ECS operations are executed prior to Government acceptance. Since each scenario is driven by, and mapped to, its underlying level-3 requirements, these requirements are verified by virtue of executing the scenario. When taken together, these scenarios can be traced to all ECS level-3 requirements. Thus, level-3 requirements are satisfied during acceptance testing to the extent that the scenarios themselves are verified.

3.4 Release Requirements Matrix Format

The remaining sections of this document include requirements matrices, extracted from the RTM tool, specific towards each release. These matrices depict the traceability between Level 3 requirements and System and Acceptance Test assignments. Specifically, the matrices contain the following items, which are shown as column headings:

- **Requirement-by-Release Source Id.** The Level 3 requirement identifier, obtained from the Functional and Performance Requirements Specification for the ECS (423-41-02), and. Example: "EOSD0010"

- **Requirement Text.** The text of the Requirement-by-Release requirement. Example: "ECS shall use and support the Space Network (SN), via the EDOS/Ecom interface, to obtain the forward and return link data communications needed to achieve full end-to-end ECS functionality"
- **Requirement Category.** The priority of each requirement. The options include: mission (critical), mission (essential), and mission (fulfillment).
- **Verification Method.** The method of verifying each requirement. The options include: test, (demo)nstration, analysis and (inspect)ion.
- **System Test Assignment.** The System Test Assignment column contains system test codes, extracted from the System Test Class in RTM, to identify the test cases used to verify each requirement. These test codes were derived from the System Integration and Test Plan's (DID 402) build/thread diagrams and sequence/test case numbers. The format of the code is divided into two categories: thread and build.
 - Build test codes contain:
 - Bbb - System build number as identified in SITP build/thread diagrams
 - ss - System sequence number as identified in SITP as test sequences
 - cc - System test case number as identified in SITP as test cases

Combined together, the System build test codes are derived - Bbb.ss.cc. Example "B11.02.05".
 - Thread test codes contain:
 - Tbb-tt - (System build number)-(System thread number associated with that build) as identified in SITP build/thread diagrams
 - ss - System sequence number as identified in SITP as test sequences
 - cc - System test case number as identified in SITP as test cases

Combined together, the System thread test codes are derived - Tbb-tt.ss.cc. Example "T11-01.04.03".
- **Acceptance Test Assignment.** The Acceptance Test Assignment column will contain Acceptance Test codes, extracted from the Acceptance Test Class in RTM, to identify the scenarios and test cases used to verify each requirement. The format of this code includes:
 - R - ATP Release identification
 - GG - Group number as identified in ATP
 - ss - Scenario number as identified in ATP
 - SS - Sequence number as identified in ATP
 - xxx - Test case number as identified in ATP

Combined together, the Acceptance test codes are derived - RGGssSS.xxx. Example "A080210.110".

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4. Interim Release 1 Requirements

4.1 Interim Release 1 Capabilities

This section summarizes the content of Interim Release 1 as described in The Release Plan Content Description Technical Paper (222-TP-003-005).

4.1.1 Early Interface Support

TRMM (Tropical Rainfall Measurement Mission) is a platform scheduled for launch in August 1997 which relies on ECS to support its mission. Driven by the launch date but prior to it, and per the EOS Ground System Integration Plan which states that early interface testing of TRMM interfaces must be available by 1/3/96, some ECS capabilities will be available in IR-1. They include:

- Visible Infrared Scanner (VIRS) data products transfer between TRMM Science Data and Information System (TSDIS) and Goddard Space Flight Center (GSFC),
- Precipatory Radar (PR) and TRMM Microwave Image (TMI) data products transfer between TSDIS and Marshall Space Flight Center (MSFC),
- Clouds and Earth's Radiant Energy System (CERES) and non-TRMM data transfer from TSDIS to Langley Research Center (LaRC),
- CERES Level 0 (L0) data transfer from TRMM Science Data Processing Facilities (SDPF) to LaRC,
- Lightning Imaging Sensor (LIS) L0 data transfer from TRMM SDPF to MSFC.

To support TRMM data transfer and early interface testing, basic ingest services will be available at GSFC, MSFC, and LaRC to interface with TSDIS and the SDPF. Early interface testing between Science Computing Facilities (SCFs) and GSFC (EOS AM-1 Beta only), MSFC, and LaRC interfaces will be available in order to transfer algorithms and algorithm support data.

4.1.2 Science Software Support

Initial deliveries of TRMM CERES and LIS Version 1 algorithms and EOS AM-1 Beta review and Version 1 algorithms are near the end of 1995. SDP toolkit deliveries must be made twelve months prior to the Beta reviews for each EOS AM-1 algorithm and twelve months prior to Version 1 delivery for TRMM algorithms. Therefore, full Science Data Processing (SDP) toolkit support of TRMM data will be available mid-1995, and Algorithm Integration and Test (AI&T) support for TRMM and EOS AM-1 will be available the end of 1995.

4.2 IR-1 Requirements Matrix

The requirements in Table 4-1 are necessary to fulfill early TRMM interface testing and TRMM and EOS AM-1 science software support.

Table 4-1. Interim Release 1 Requirements Matrix

Requirement Source ID	Requirement Text	Req. Category	Verification Method	System Test Assignment
DADS0130	Each DADS shall receive from the SDPF, at a minimum, the following: a. Production data (L0)	essential	test	B02.01.00 B02.03.00
DADS0145	Each DADS shall be capable of receiving from the ADCs, at a minimum, the following for the purpose of product generation: b. Metadata c. Ancillary data	essential	test	B02.01.00 B02.03.01
DADS0170	Each DADS shall be capable of receiving from designated EPDSs and ODCs, at a minimum, the following: a. L0-L4 data sets b. Metadata	essential	test	B02.01.00 B02.03.01
DADS0190	Each DADS shall receive from the SCF, at a minimum, the following: g. Algorithms	essential	test	B03.01.00
DADS0250	Each DADS shall receive, at a minimum, data in the following forms: a. Physical electronic media b. Electronic communications network	essential	test	B02.04.00 B02.05.00 B02.07.00
DADS0260	Each DADS shall receive non-EOS correlative and ancillary digital data.	essential	test	B02.01.00 B02.03.00
DADS0290	Each DADS shall check all metadata and data it receives. For each type of data described by the metadata, the data shall be checked for the presence of required fields, and correctness of the data set granule size.	essential	test	B02.01.01 B02.01.02
DADS0300	Each DADS shall generate status indicating the success or failure of metadata and data consistency checks.	essential	test	B02.01.01
DADS0475	The DADS shall provide storage for the following TRMM data: a. L0-L4 equivalent data products c. Associated ancillary data sets e. Associated metadata g. Algorithms.	essential	test	B02.01.01 B03.01.00 B03.10.00
DADS0901	The DADS element shall collect the management data used to support the following system management functions: f. Security Management	essential	test	B02.08.01
DADS1070	The DADS shall send data check and storage status to the provider of ingest data.	essential	test	B02.01.00 B02.03.00
DADS1380	Each DADS shall monitor data transfer between external (non-ECS) elements and the DADS.	essential	test	B02.01.00
DADS1400	Each DADS shall notify the originating source of the need to retransmit data in the event of transmission difficulties.	essential	test	B02.01.02
DADS1850	Each DADS shall utilize the configuration management toolkit provided by the SMC.	essential	demo	B03.01.01 B03.02.00 B03.03.00 B03.04.00 T03-01.01.00 T03-01.02.00 T03-01.03.00 T03-01.04.00
DADS1860	Each DADS shall, in conjunction with the SMC, provide configuration management for its internal resources.	essential	demo	B03.01.01 B03.02.00 B03.03.00 B03.04.00 B03.05.00 T03-01.01.00 T03-01.02.00 T03-01.03.00 T03-01.04.00

Table 4-1. Interim Release 1 Requirements Matrix

Requirement Source ID	Requirement Text	Req. Category	Verification Method	System Test Assignment
EOSD0500	ECS shall perform the following major functions: d. Communications and Networking e. Data Input f. Data Processing g. Data Storage	essential	test	B01.04.00 B01.05.00 B01.08.00 B01.09.00 B01.10.00 B02.00.00 B02.01.00 B02.03.00 B03.06.00 T02-01.01.00 T02-01.02.00 T02-02.01.00 B04.01.00
EOSD0502	ECS shall provide an integrated set of toolkits consisting of software tools for each ECS element.	essential	demo	B03.04.00 B03.05.00 B03.06.00 T03-01.07.00 T03-01.08.00 T03-01.09.00
EOSD0510	ECS shall be capable of being tested during all phases of its development .	essential	test	B01.00.00 B02.00.00 T01-02.00.00 B03.00.00 T02-01.00.00 T02-02.00.00 B04.00.00 T03-01.00.00 T01-01.00.00 T04-01.00.00
EOSD0730	Each ECS element shall be capable of verifying the fidelity of the ECS element interface to: b. Entities external to ECS at any time during the lifetime of the ECS	critical	test	B02.03.00 B03.01.00 B03.09.00 B03.11.00 B04.01.00
EOSD0780	Each ECS element shall be capable of being monitored during testing.	fulfillment	demo	B01.00.00 B02.00.00 T01-02.00.00 B03.00.00 T02-01.00.00 T02-02.00.00 B04.00.00 T03-01.00.00 T01-01.00.00 T04-01.00.00
EOSD1607	ECS shall receive data from near term Earth Probe missions to include the following as a minimum: a). TRMM data for temporary storage for testing purposes only.	essential	test	B02.03.00
EOSD1608	ECS elements shall receive from EPDSs the following at a minimum: a. Data products e. Metadata	essential	test	B02.03.00 T02-01.02.00 T02-02.01.00 B04.01.00
EOSD1703	ECS shall provide maintenance and operations interfaces to the DAACs to support the functions of: a). System Management b). Science Algorithm Integration f). System Maintenance	essential	demo	T04-01.05.00
EOSD1710	ECS elements shall exchange with ADCs/ODCs, such as NOAA and other data processing and archiving facilities, information including the following: d. Science Data	fulfillment	demo	B02.03.00 B04.01.00

Table 4-1. Interim Release 1 Requirements Matrix

Requirement Source ID	Requirement Text	Req. Category	Verification Method	System Test Assignment
EOSD1750	ECS elements shall receive data including the following types of supporting information from the ECS science community (TLs, TMs, Pls, and Co-Is): a. Algorithms b. Software fixes d. Integration support requests	essential	demo	B03.01.00 B03.13.00 T03-01.04.00
EOSD1760	The ECS elements shall send the following types of data at a minimum to the ECS science community (TLs, TMs, Pls, and Co-Is): a. Software Problem Reports	fulfillment	demo	B03.13.00
EOSD3200	A minimum of one backup which is maintained in a separate physical location (i.e., different building) shall be maintained for ECS software.	critical	inspection	T04-01.05.00
EOSD4010	Each computer providing product generation shall have an operational availability of 0.95 at a minimum (.9995 design goal).	essential	analysis	B03.14.00
EOSD5020	ECS software, hardware, and interfaces shall enable transparent portability across heterogeneous site architectures, i.e. performing the same function at different ECS sites that may have different hardware implementations.	fulfillment	analysis	B01.00.00 B02.00.00 T01-02.00.00 B03.00.00 T02-01.00.00 T02-02.00.00 B04.00.00 T03-01.00.00 T01-01.00.00 T04-01.00.00
ESN-0003	The ESN shall enable researchers on existing networks (TCP/IP and GOSIP) to gain access to data and ECS services in a transparent manner to the underlying differences between the networks.	essential	analysis	B01.01.00 B01.03.00 B01.06.00 B01.07.00 T01-02.01.00 T01-02.02.00 T01-02.05.00
ESN-0005	The ESN internal networks shall be dedicated networks linking ECS facilities for internal ECS operations (e.g., scheduling, product generation, QA validation).	critical	analysis	B01.08.00 B01.09.00 T01-02.03.00
ESN-0006	ESN shall interface with NSI to reach all external non-ECS network-attached facilities and science users.	essential	analysis	B01.10.00

Table 4-1. Interim Release 1 Requirements Matrix

Requirement Source ID	Requirement Text	Req. Category	Verification Method	System Test Assignment
ESN-0010	ESN shall provide the following standard services: a. Data Transfer and Management Services b. Electronic Messaging Service c. Remote Terminal Service d. Process to Process Communication Service e. Directory and User Access Control Service f. Network Management Service g. Network Security and Access Control Service h. Internetwork Interface Services	essential	test	B01.01.00 B01.02.00 B01.03.01 B01.03.04 B01.04.00 B01.05.00 B01.06.00 T01-01.02.00 B01.07.00 T01-01.03.00 B01.08.00 B01.09.00 T01-01.04.00 T01-01.05.00 T01-01.07.00 T01-02.01.00 B03.01.00 T01-02.04.00 T01-02.05.01 T01-02.05.02 T01-02.05.03 T01-02.05.04 B04.02.00 T04-01.04.00 T01-01.06.00
ESN-0070	The ESN shall support the elements data flow requirements identified in this specification.	critical	test	B03.14.00
ESN-0210	The ESN management function shall have a capability to obtain status on specific data flows to assure the successful operation of ESN.	critical	test	B04.02.00
ESN-0250	The ESN shall provide a help service to assist users with communication questions and problems.	essential	demo	B04.02.00
ESN-0280	The ESN shall provide file transfer and management service and as a minimum shall include the capability to transfer the following data types: a. Unstructured Text b. Binary Unstructured c. Binary Sequential d. Sequential Text	critical	test	B01.06.00 B01.07.00 T01-01.04.00 T01-01.05.00 T01-01.07.00 B03.01.00 T01-01.06.00
ESN-0290	The file transfer and management service shall be available in interactive and non-interactive services.	critical	test	B01.06.00 B01.07.00 T01-01.04.00 T01-01.05.00 T01-01.07.00 B03.01.00 T01-01.06.00
ESN-0300	The file transfer and management non-interactive services shall be able to be scheduled.	critical	test	B01.06.00 B01.07.00 T01-01.04.00 T01-01.05.00 T01-01.07.00 B03.01.00 T01-01.06.00
ESN-0370	The ESN shall provide interactive virtual terminal services.	essential	test	B01.01.00
ESN-0450	The ESN shall provide process-to-process communication service.	critical	test	B01.04.00
ESN-0490	The ESN shall provide a name-to-attribute mapping Directory Service at a minimum.	critical	test	B01.03.03 B01.03.04
ESN-0510	The directory function shall be able to respond to requests for information concerning named objects, either physical or logical, so as to support communications with those objects.	critical	test	B01.03.03 B01.03.04 B01.04.00

Table 4-1. Interim Release 1 Requirements Matrix

Requirement Source ID	Requirement Text	Req. Category	Verification Method	System Test Assignment
ESN-0590	The ESN Directory Service shall be protected by access control capabilities.	critical	test	B01.03.00
ESN-0600	The ESN Directory service shall include services and supporting mechanisms to authenticate the credentials of a user for the purpose of granting access rights and authorizing requested operations.	critical	test	B01.03.00
ESN-0610	The ESN shall include multiple Directory Service Agents (DSAs) which shall be collectively responsible for holding or retrieving all directory information which is needed by ECS.	critical	test	B01.03.03 B01.03.04
ESN-0620	The ESN shall include a network management function to monitor and control the ESN.	critical	test	T04-01.04.00
ESN-0640	The ESN shall include management functions at each ECS element, equipment or gateway within the ESN.	critical	test	B04.02.00
ESN-0650	The ESN shall perform the following network management functions for each protocol stack implemented in any ECS element, and each communications facility: a. Network Configuration Management b. Network Fault Management c. Network Performance Management d. Network Security Management	critical	test	B04.02.00
ESN-0740	The ESN network management service shall retrieve performance/fault data about ESN protocol stacks and equipment.	essential	test	B04.02.00
ESN-0760	The ESN report generation function shall provide, on an interactive and scheduled basis, network configuration, fault and performance management information.	essential	test	B04.02.00
ESN-0775	The ESN management service shall have the capability to redirect its reports to different devices such as console, disk or printer.	essential	test	B04.02.00
ESN-0790	The ESN shall include the following configuration management functions at a minimum: a. collect information describing the state of the network subsystem and its communications resources, b. exercise control over the configuration, parameters, and resources of the subsystem, and over the information collected, c. store the configuration information collected, and d. display the configuration information	essential	test	B04.02.00
ESN-0800	The ESN shall be capable of displaying the local network configuration status related to each system locally, and for all systems at the ESN network management facility.	essential	test	B04.02.00
ESN-0830	The ESN shall have the capability to detect and report communications related errors and events both locally and at the ESN network management facility.	critical	test	B04.02.00
ESN-0840	The ESN shall have error reporting and event logging.	critical	test	B01.04.01 B01.04.02 T01-01.05.03 T01-01.05.04
ESN-0900	Errors and events to be detected shall include at least: b. communications hardware errors c. protocol errors d. performance degradation conditions e. telecommunications errors and failures	critical	test	B04.02.00
ESN-0910	The ESN fault management shall provide the capability to perform the following functions, at a minimum, both locally and at the ESN network management facility: c. enable and disable event reports within a system d. manage error and event logging files	essential	test	B04.02.00
ESN-1060	The ESN performance management function shall provide the capability to evaluate the performance of ESN resources and interconnection activities.	essential	test	B04.02.00 B04.03.00

Table 4-1. Interim Release 1 Requirements Matrix

Requirement Source ID	Requirement Text	Req. Category	Verification Method	System Test Assignment
ESN-1070	The ESN shall provide the capability to perform the following functions, at a minimum: a. generate/collect network statistics b. control collection/generation of network statistics c. store system statistics and statistical histories d. display the system statistics	essential	test	B04.03.00
ESN-1140	The ESN shall provide protocol translation, termination, bridging and routing.	critical	test	B01.05.00 B01.06.00
ESN-1170	The ESN shall provide necessary translation within supported file transfer and e-mail services.	critical	test	B01.05.00 B01.06.00 T01-01.02.00 T01-01.03.00 T01-01.04.00 T01-01.05.00 T01-01.07.00 T01-01.06.00
ESN-1180	The ESN shall interoperate with NSI to provide user access to ECS.	critical	test	T01-02.05.06
ESN-1340	The ESN shall provide support for TCP/IP communications protocols and services to external interfaces as required by the IRDs.	critical	analysis	T01-02.05.07
ESN-1350	The ESN LANs shall provide physical devices and the corresponding medium access control (MAC) protocol compatible with ISO and ANSI standards.	critical	analysis	B01.03.00
ESN-1360	The ESN shall control access of processes and users through an authentication and authorization service that meets GNMP standards.	critical	test	B01.01.00 B01.03.00 T01-01.01.00
ESN-1400	The following security functions and services, at a minimum, shall be provided: a. authentication b. access (authorization) control	critical	test	B01.01.00 B01.03.00 T01-01.01.00
PGS-0140	The PGS shall provide tools to help the PGS staff create and modify SDPS plans.	essential	test	B03.06.00
PGS-0210	The PGS shall maintain an algorithm processing control language capable of constructs (e.g., if-then-else) based on the complexities of the PGS. This control language shall be utilized in conjunction with a database of product specifications that contains the recipe for the generation of all Standard Products allocated to that PGS including, at a minimum: a. The algorithm(s) to be used b. The mission essential	essential	test	B03.06.00
PGS-0270	The PGS shall provide the capability to perform the following functions, at a minimum: b. Suspend execution of tasks c. Resume execution of a suspended task d. Cancel execution of tasks	essential	test	B03.06.03 B03.06.04 B03.06.05
PGS-0310	The PGS element shall collect the management data used to support the following system management functions: e. Performance Management f. Security Management	essential	test	B03.13.01
PGS-0320	The PGS shall display detected faults to the system operators.	essential	test	B03.07.01 B03.07.02 B03.07.03 B03.09.02 B03.10.01 B03.10.02 B03.10.03 B03.10.04
PGS-0360	The PGS shall generate a PGS processing log that accounts for all data processing activities.	essential	test	B03.06.11 B03.07.04

Table 4-1. Interim Release 1 Requirements Matrix

Requirement Source ID	Requirement Text	Req. Category	Verification Method	System Test Assignment
PGS-0370	The PGS shall utilize the LSM to generate a PGS resource utilization report.	essential	test	B03.06.12
PGS-0400	The PGS shall have the capability to monitor the status of all algorithm and calibration coefficient testing and generate algorithm and calibration test reports.	essential	test	B03.02.00
PGS-0420	The PGS shall provide tools to analyze system performance.	essential	test	B03.13.02
PGS-0430	The PGS shall utilize the LSM to monitor and account for data and information transfer between it and other EOSDIS elements.	essential	test	B01.02.00 B01.07.00 T01-01.04.00 T01-01.05.00 T01-02.04.00 T01-02.05.00 T01-01.06.00
PGS-0490	The PGS shall have the capability to access and use, for the generation of Standard Products, information such as: a. Digital terrain map databases b. Land/sea databases c. Climatology databases d. Digital political map databases	essential	test	B03.10.02 B03.10.03 B03.10.04 B03.10.05 T03-01.06.00
PGS-0602	The PGS shall have the capability to accept POSIX-compliant science algorithms and compile algorithm source code written in a standard programming language (e.g., Fortran, C, Ada).	essential	test	B03.03.00 T03-01.07.03 T03-01.07.04
PGS-0610	The PGS shall accept from the SCFs new or modified calibration coefficients to be validated in the test environment. Calibration coefficients shall contain the following information at a minimum: a. Identification of coefficient data set b. Calibration coefficients values c. Author and version number d. Identification of related processing algorithm e. Start and stop date/time of applicability	essential	test	B03.01.00 B03.11.03 T03-01.09.03
PGS-0620	The PGS shall have the capability to validate received calibration coefficients for completeness and correct format.	essential	test	B03.03.00 B03.04.00 B03.05.00 T03-01.07.03 T03-01.07.04
PGS-0640	The PGS shall accept from the SCF new or modified Standard Product algorithms to be tested at the processing facility. This software shall be received into the test environment and shall contain the following information at a minimum : a. Algorithm identification b. Algorithm source code c. List of required inputs d. Processing dependencies e. Test data and procedures f. Algorithm documentation	essential	test	B03.01.00 T03-01.05.01
PGS-0650	The PGS shall have the capability to validate required operational algorithm characteristics prior to scheduling algorithm test time. These characteristics shall include at a minimum: a. Language b. Operational impacts (e.g., algorithm software size, required resources) c. Algorithm documentation d. Data handling standards as appropriate e. Units and models used f. Operational compatibility	essential	test	B03.03.03
PGS-0860	The PGS shall have the capability to schedule and coordinate algorithm and calibration coefficient test time in the test environment with the appropriate SCF.	essential	test	B03.13.00

Table 4-1. Interim Release 1 Requirements Matrix

Requirement Source ID	Requirement Text	Req. Category	Verification Method	System Test Assignment
PGS-0900	The PGS shall send test products to the SCF for analysis. These shall contain the results of algorithm testing and shall contain the following information at a minimum: a. Algorithm identification b. Test time(s) c. Processor identification d. Test results	essential	test	B03.09.00
PGS-0910	The PGS shall have the capability to support analysis of algorithm test results.	essential	test	B03.08.00
PGS-0920	The PGS shall have the capability to validate, through testing, that SCF processing algorithms will execute properly in the operational environment. Validation shall include final compilation and linkage of the source code and testing to verify proper software execution in the operational environment based on indicated data and test results provided by the SCF and the investigator, but shallmission essential	essential	test	B03.08.00 T03-01.08.00
PGS-0925	The PGS shall validate algorithms used for conversions, calibrations and transformations of EOS engineering data.	essential	test	T03-01.07.00
PGS-0940	The PGS shall provide storage for all candidate algorithms' software executables and calibration coefficients.	essential	test	B03.01.01 B03.11.03 T03-01.05.01
PGS-0950	The PGS shall interface to the SMC to maintain configuration control of all algorithms and calibration coefficients used in operational Standard Product production. Controlled information shall contain at a minimum: a. Source code including version number and author b. Benchmark test procedures, test data, and results c. Date and time of operational installation d. Compiler identification and mission essential	essential	test	B03.02.01 T03-01.05.01
PGS-0970	The PGS shall provide access subroutines that enforce compliance with the adopted standard ECS formats.	essential	test	B03.03.01 B03.03.02 T03-01.07.05 T03-01.07.06
PGS-0980	The PGS shall provide job control routines that provide all required task parameters to the Standard Product software.	essential	test	B03.06.00
PGS-0990	The PGS shall provide error logging subroutines for use by Standard Product software in notifying the system operators of conditions requiring their attention.	essential	test	B03.01.02 B03.01.03 B03.03.02 B03.04.02 B03.05.02 B03.06.02 B03.08.02 B03.09.02 B03.09.03
PGS-1000	The PGS shall provide error logging subroutines for use by Standard Product software in notifying users of conditions requiring their attention.	essential	test	B03.01.02 B03.01.03 B03.03.02 B03.04.02 B03.05.02 B03.06.02 B03.08.02 B03.09.02 B03.09.03
PGS-1010	The PGS shall provide mass storage allocation subroutines that provide algorithms with a means for dynamic allocation of storage for temporary files.	essential	test	B03.06.01 B03.06.02 B03.06.03 B03.06.04 B03.06.05

Table 4-1. Interim Release 1 Requirements Matrix

Requirement Source ID	Requirement Text	Req. Category	Verification Method	System Test Assignment
PGS-1015	The PGS shall provide ancillary data access subroutines that provide Standard Product software access to ephemeris data (e.g., solar, lunar, and satellite ephemeris), Earth rotation data, and time and position measurement data. These subroutines shall perform operations such as: a. Interpolation b. Extrapolation c. Coordinate system conversion	essential	test	T03-01.08.00 T03-01.09.00
PGS-1020	The PGS shall provide mathematical libraries including: a. Linear algebra and analysis (e.g., LINPAC, IMSL) b. Statistical calculations (e.g., SAS, SPSS)	essential	test	T03-01.08.00
PGS-1025	The PGS shall provide a Science Processing Library containing routines such as: a. Image processing routines b. Data visualization routines c. Graphics routines	essential	test	B03.12.00
PGS-1030	The PGS shall provide a toolkit to the SCF containing versions of the routines specified in requirements PGS-0970 to PGS-1020.	essential	test	T03-01.08.00
PGS-1220	The PGS shall have the capability to receive GFE databases and associated tools, including COTS and public domain databases, and maintain them as required as inputs to product generation. Example databases are: a. Digital terrain map databases b. Land/sea databases c. Climatology databases d. Digital political map databases	essential	test	T03-01.06.00
PGS-1315	Each PGS shall have the capacity to support I/O to temporary and intermediate storage or multiple passes over input products as required by individual science algorithms.	essential	test	B03.14.00
SDPS0010	The SDPS shall provide CSMS with operational, and data processing, data quality status.	essential	test	B02.02.00 B03.02.00 B04.02.00
SDPS0016	The SDPS shall coordinate and resolve schedule conflicts between IMS, DADS and PGS.	essential	test	T04-01.02.00
SDPS0020	The SDPS shall receive EOS science, and engineering data from the SDPF, and non-EOS ancillary data (as listed in Appendix C) from ADCs.	essential	test	B02.01.00 B02.03.00 B04.01.00
SDPS0080	The SDPS shall archive, quality check all science data received from the EPDSs and ancillary data received from the ADCs.	essential	test	B02.03.00 B02.04.00 B04.01.00
SDPS0090	The SDPS shall interface with the PIs and the other science users to support the development and testing of data product algorithms and QA of produced data products.	essential	inspection	B01.04.00 B03.01.00 B03.09.00
SDPS0110	The SDPS shall be responsible for coordination of the transfer of production and quick-look science and engineering data from SDPF.	essential	test	B02.03.00 B02.04.00
SDPS0140	The SDPS shall support element, system, and subsystem test activities throughout the development phase.	essential	inspection	B01.00.00 B02.00.00 T01-02.00.00 B03.00.00 T02-01.00.00 T02-02.00.00 B04.00.00 T03-01.00.00 T01-01.00.00 T04-01.00.00
SMC-2200	The SMC shall assist each site or element, when necessary, in the performance of on-site preventive and corrective hardware and systems software maintenance.	essential	demo	T04-01.02.00 T04-01.04.00
SMC-2205	The LSM shall support on-site preventive and corrective hardware and systems software maintenance.	critical	analysis	T04-01.02.00 T04-01.04.00

Table 4-1. Interim Release 1 Requirements Matrix

Requirement Source ID	Requirement Text	Req. Category	Verification Method	System Test Assignment
SMC-2210	The SMC shall coordinate with each site or element in the management of off-site corrective hardware and systems software maintenance.	essential	demo	T04-01.02.00 T04-01.04.00
SMC-2215	The LSM shall coordinate with the SMC in the management of off-site corrective hardware and systems software maintenance.	critical	analysis	T04-01.02.00 T04-01.04.00
SMC-2220	The SMC shall monitor hardware and systems software maintenance status for off-site repair actions.	essential	demo	T04-01.02.00 T04-01.04.00
SMC-2305	The LSM shall monitor the spares inventory within its element.	critical	demo	T04-01.02.00 T04-01.05.00
SMC-2315	The LSM shall manage the replenishment of spare parts within its element.	critical	demo	T04-01.02.00 T04-01.05.00
SMC-2325	The LSM shall monitor the consumable inventory within its element for items used by the system including, at a minimum: a. Computer tapes b. Computer disks c. Computer paper	essential	demo	T04-01.02.00 T04-01.05.00
SMC-2335	The LSM shall manage the replenishment of consumable items for its element.	essential	demo	T04-01.02.00 T04-01.05.00
SMC-2500	The SMC shall establish and maintain a system-wide inventory of all hardware, scientific and system software contained within ECS, including at a minimum: a. Hardware or software identification numbers b. Version numbers and dates c. Manufacturer d. Part number e. Serial number f. Name and locator information for software maintenance g. Location where hardware or software is used	essential	test	T04-01.04.00
SMC-2505	The LSM shall update the system-wide inventory data base consisting of all hardware, system software, and scientific software contained within its element.	critical	test	T04-01.04.00
SMC-2510	The SMC shall provide at a minimum system-wide configuration management for the operational hardware, scientific and system software, and the SMC toolkit contained within ECS.	essential	analysis	T03-01.01.00 T03-01.02.00 T03-01.03.00 T03-01.04.00 T03-01.05.00
SMC-2515	The LSM shall provide configuration management for at least the operational hardware, system software, and scientific software within its element and for the migration of enhancements into the operational system.	critical	test	T03-01.01.00 T03-01.02.00 T03-01.03.00 T03-01.04.00 T03-01.05.00
SMC-3300	The SMC shall monitor site and element hardware, and scientific and system software status to determine their operational states including, at a minimum: a. On-line b. Failed	essential	demo	B02.06.00 B03.07.01 B03.07.02 B03.07.03 B03.11.02 B04.02.00
SMC-3305	The LSM shall monitor its elements hardware, and scientific and system software status to determine their operational states including, at a minimum : a. On-line b. Failed	critical	test	B02.06.00 B03.07.01 B03.07.02 B03.07.03 B03.11.02 B04.02.00
SMC-3370	For each performance parameter, the SMC shall have the capability of establishing multiple levels of thresholds to include, at a minimum: a. On/off b. Pass/fail c. Various levels of degradation	critical	test	T04-01.01.00

Table 4-1. Interim Release 1 Requirements Matrix

Requirement Source ID	Requirement Text	Req. Category	Verification Method	System Test Assignment
SMC-3375	For each limit checked parameter, the LSM (including those thresholds directed by the SMC) shall have the capability of evaluating multiple levels of thresholds including, at a minimum: a. On/off b. Pass/fail	critical	test	T04-01.04.00
SMC-3380	The SMC shall evaluate overall system performance.	essential	analysis	T04-01.02.00
SMC-3385	The LSM shall evaluate system performance against the ESDIS project established performance criteria.	critical	analysis	T04-01.02.00 T04-01.04.00
SMC-3390	The SMC shall generate alert indicators of fault or degraded conditions.	critical	test	T04-01.01.00
SMC-3395	The LSM shall generate, in response to each limit check threshold, alert indicators of fault or degraded conditions with the appropriate corrective actions.	critical	test	T04-01.02.00 T04-01.04.00
SMC-3415	The LSM shall perform short and long-term trend analysis of element performance, including, at a minimum: a. Operational status b. Performance of a particular resource c. Maintenance activities (e.g., number of repairs per item)	essential	test	T04-01.02.00
SMC-4305	The LSM shall maintain fault management policies and procedures for its element.	essential	analysis	T04-01.02.00
SMC-4310	The SMC shall perform fault analysis including, at a minimum: a. Isolation b. Location c. Identification d. Characterization	essential	analysis	B02.06.00 B03.07.00 B03.11.00 B04.02.00
SMC-4311	he SMC shall have the capability to perform fault analysis to the level of, at a minimum: a. Subsystem b. Equipment	essential	demo	B02.06.00 B03.07.00 B03.11.00 B04.02.00
SMC-4315	The LSM shall, at a minimum, isolate, locate, and identify faults, identify subsystem, equipment, and software faults, and identify the nature of the faults within its element.	critical	test	B02.06.00 B03.07.00 B03.11.00 B04.02.00
SMC-4320	SMC shall support fault diagnosis testing to include, at a minimum: b. Resource-to-resource connectivity testing	essential	demo	T04-01.01.00
SMC-4325	The LSM shall request fault diagnosis testing be performed, including, at a minimum: b. Resource-to-resource connectivity testing within its element	essential	demo	T04-01.02.00 T04-01.04.00
SMC-5320	The SMC shall establish, maintain, and authenticate access privileges for ECS scientific users.	critical	test	T04-01.01.00
SMC-5325	The LSM shall promulgate, maintain, authenticate, and monitor user and device accesses and privileges.	critical	test	T04-01.01.00
SMC-5330	The SMC shall provide support, manage, maintain, and request security testing that includes, at a minimum, password checking.	critical	test	T04-01.01.00
SMC-5335	The LSM shall perform security testing that includes, at a minimum, password auditing and element internal access/privileges checking.	critical	test	T04-01.01.00
SMC-5345	The LSM shall perform compromise (e.g., virus or worm penetration) risk analysis, and detection.	critical	analysis	T04-01.01.00
SMC-5355	The LSM shall isolate the compromised area, detach the compromised input I/O, and the compromised areas output I/O until the compromise has been eliminated	critical	test	T04-01.01.00
SMC-5365	The LSM shall generate recovery actions in response to the detection of compromises.	critical	analysis	T04-01.01.00
SMC-8305	The LSM shall have the same report generator capability as for the SMC, except it shall be limited to generating reports covering only its particular site or its particular element.	essential	test	T04-01.02.00 T04-01.04.00

Table 4-1. Interim Release 1 Requirements Matrix

Requirement Source ID	Requirement Text	Req. Category	Verification Method	System Test Assignment
SMC-8705	The LSM shall have the capability to generate the same types of reports listed under the SMC report generation service, except that each report shall cover only its particular site or its particular element.	essential	test	T04-01.02.00 T04-01.04.00
SMC-8840	The SMC shall have the capability to generate detailed and summary reports indicating the performance of ground resources, including, at a minimum: c. Resource utilization	essential	test	T04-01.02.00 T04-01.04.00
SMC-8880	The SMC shall have the capability to generate detailed and summary security compromise reports indicating security compromises of ground resources and facilities, including, at a minimum: a. Security compromise type and description b. Time of occurrence	critical	test	T04-01.02.00 T04-01.04.00

5. Release A Requirements

5.1 Release A Capabilities

This section summarizes the content of Release A as described in the Release Plan Content Description Technical Paper (222-TP-003-005).

5.1.1 Early Interface Testing

Landsat-7 is currently scheduled for Late-1998 launch and relies on ECS for support. Per the EOS Ground System Integration Plan, ECS capabilities must be available for early Landsat-7 interface testing by beginning of 1997. These capabilities include ingest for Landsat-7 LOR data, data search, order and distribution services for Landsat-7 data.

EOS AM-1 is currently scheduled for June 1998 launch and relies on ECS for support. Driven by the launch date, ECS capabilities must be in order for the Flight Operations Segment (FOS) to support early interface testing of the EOS AM-1 platform. The testing includes spacecraft and spacecraft bus compatibility tests, spacecraft comprehensive tests, spacecraft pre-ship and post-ship tests, mission operations simulations and spacecraft performance tests.

The Color platform is currently scheduled for launch October 1998. Some ECS capabilities must be available for early Color interface testing. Per the EOS Ground System Integration Plan, the ECS functions to support key interface testing must be available by 2/1/1997.

5.1.2 Mission Support

ECS will provide data operations services including data archive, data access, and distribution services for TRMM (CERES, LIS, PR, TMI, VIRS). Access of ancillary/correlative data necessary for TRMM data production will also be supported.

5.1.3 Version 0/ADC Interoperability

Version 0 interoperability involves two capabilities. Outgoing interoperability allows users to log into the ECS and access ECS IMS services, along with the capability of accessing non-ECS data products from sites external to ECS, directly from the ECS user interface. Incoming interoperability allows users, who are logged into a non-ECS site to access ECS data products from the non-ECS user interface, using non-ECS IMS services.

ECS will provide two-way interoperability with V0 and migration and/or access of Version 0 data archives. Two-way interoperability with National Oceanic and Atmospheric Administration (NOAA) and the Consortium for International Earth Science Information Network (CIESIN) will also be provided.

5.1.4 Core Functionality

This section presents areas where Release A will provide functionality based on the user community interaction.

ECS capabilities will include: cross-DAAC searching, involving DAAC to DAAC message and data passing, searches utilizing combinations of logical operations, data specific searches, attribute searches across DAACs and data sets. Data visualization capabilities including simultaneous display of multiple browse products, displaying results from cross DAAC searches and data set specific searches and data timeline displays will be provided. ECS will provide statistics collection for information management services including multiple DAAC ordering, order history across DAACs, on-line user surveys at all sites; and cost estimation and account status interfaces to generate data distribution accounting information. Application programming interfaces (APIs) will be supported for update, query, and data base administration utilities. Storage system resource management, tracking of specific data granules, and automated authentication for data distribution will all be included in Release A.

5.1.5 Science Software Support

EOS AM-1 Version 2 algorithm delivery is scheduled for mid-1997. ECS will support full end-to-end testing of the algorithms and ECS infrastructure software (ancillary/auxiliary data ingest preparation, DAAC-to-DAAC transfers, Level 0 data validation, algorithm delivery, and algorithm product QA services) will be in place for the integration of TRMM and EOS AM-1 Version 2 algorithms.

5.1.6 Flight Operations Segment Support

ECS will be capable of sending/receiving data to and from EDOS and ECOM through FOS interface components including: user interface shells, inter-process communications, data base tables, and communication with external interfaces. ECS will also provide core FOS functionality including planning and scheduling, command management systems, spacecraft and instrument analysis, user interfaces, and data management functions required for EOS AM-1 support and Instrument Support Terminal (IST) toolkits.

5.2 Release A Requirements Matrix

The requirements in Table 5-1 are necessary to fulfill Release A capabilities.

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS0010	Each DADS shall receive updated metadata for products that have been QA'd.	essential	test	B15.06.01 T15-01.01.04 T15-01.02.04 T15-01.03.04 T15-01.04.04 T15-01.05.04 T15-01.09.04	A090310.000 A090310.050 A090320.100 A090310.100 A090320.050
DADS0020	Each DADS shall, upon receipt of updated metadata for products which have been QA'd, store the metadata in its inventory.	essential	demo	T12-02.09.00	A090310.000 A090320.000 A090310.050 A090320.100 A090310.100 A090320.050 A120530.000 A120530.020
DADS0100	Each DADS shall receive management directives from the SMC.	essential	test	T10-03.05.00 B10.01.00	A090530.000 A090530.020
DADS0110	Each DADS shall receive from the IMS, at a minimum, the following: a. Documents b. Product status dialog c. Product orders	essential	test	T12-02.01.00 T12-02.02.00 T13-02.01.00 T13-02.02.00 T13-02.03.05 T13-02.05.00 T13-02.06.00	A090310.000
DADS0120	Each DADS shall receive from the PGS, at a minimum, the following: a. L1-4 products b. Quick-look products c. Metadata d. Calibration e. Algorithms f. Schedule g. Status	essential	test	T10-02.01.01 T12-01.01.00 B12.02.01 T15-01.01.01 T15-01.01.03 T15-01.01.04 T15-01.02.01 T15-01.02.03 T15-01.02.04 T15-01.03.01 T15-01.03.03 T15-01.03.04 T15-01.04.01 T15-01.04.03 T15-01.04.04 T15-01.05.01 T15-01.05.03 T15-01.05.04 T15-01.07.01 T15-01.07.02 T15-01.08.01 T15-01.09.01 T15-01.09.03 T15-01.09.04	A090110.000 A090120.000 A090110.050 A090120.050
DADS0130	Each DADS shall receive from the EDOS and SDPF, at a minimum, the following: a. Production data (L0)	essential	test	B15.02.00 T15-01.01.03 T15-01.02.03 T15-01.03.03 T15-01.04.03 T15-01.05.03 T15-01.09.03 T15-02.01.04 T15-02.02.04 T15-02.03.04 T15-02.04.04	A090110.000 A090120.000 A090130.000 A090110.010 A090120.010 A090130.010 A090130.020 A090130.030 A090140.010

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS0140	Each DADS shall receive from other DAACs, at a minimum, the following for the purpose of product generation: a. L0-L4 b. Metadata c. Ancillary data d. Calibration data e. Correlative data f. Documents g. Algorithms	essential	test	T10-02.01.01 T12-02.01.00 T12-02.02.00 B15.06.00 T15-01.01.01 T15-01.01.04 T15-01.02.01 T15-01.02.04 T15-01.03.01 T15-01.03.04 T15-01.04.01 T15-01.04.04 T15-01.05.01 T15-01.05.04 T15-01.07.01 T15-01.07.02 T15-01.08.01 T15-01.09.01 T15-01.09.04 T15-02.01.01 T15-02.01.02 T15-02.01.04 T15-02.01.05 T15-02.02.01 T15-02.02.02 T15-02.02.03 T15-02.02.05 T15-02.02.06 T15-02.03.01 T15-02.03.02 T15-02.03.03 T15-02.03.05 T15-02.03.06 T15-02.04.01 T15-02.04.02 T15-02.04.04 T15-02.04.05 T15-02.06.01 T15-02.06.02 T15-02.07.01	A090110.000 A090120.000 A090130.000 A090130.010 A090130.020 A090130.030
DADS0145	Each DADS shall be capable of receiving from the ADCs, at a minimum, the following for the purpose of product generation: a. L0-L4 equivalent data sets b. Metadata c. Ancillary data d. Calibration data e. Correlative data f. Documents g. Algorithms	essential	test	T15-04.07.00 B15.06.00	A100140.000 A120510.000 A120520.000 A090250.000 A100140.020 A120510.010 A120510.030 A120540.010 A120540.020 A090260.030 A120510.020 A120540.000 A090260.000 A090270.030

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS0170	Each DADS shall be capable of receiving from designated EPDSs and ODCs, at a minimum, the following: a. L0-L4 data sets b. Metadata c. Ancillary data d. Calibration data e. Correlative data f. Documents g. Algorithms	essential	test	T10-02.01.01 B15.06.00 T15-01.01.01 T15-01.01.04 T15-01.02.01 T15-01.02.04 T15-01.03.01 T15-01.03.04 T15-01.04.01 T15-01.04.04 T15-01.05.01 T15-01.05.04 T15-01.07.01 T15-01.07.02 T15-01.08.01 T15-01.09.01 T15-01.09.04 T15-02.01.01 T15-02.01.02 T15-02.01.05 T15-02.02.01 T15-02.02.02 T15-02.02.03 T15-02.02.06 T15-02.03.01 T15-02.03.02 T15-02.03.03 T15-02.03.06 T15-02.04.01 T15-02.04.02 T15-02.04.05 T15-02.06.01 T15-02.06.02 T15-02.07.01	A090220.000 A090230.000 A090240.000 A090540.000 A090540.010 A090540.020 A090250.020 A090230.020 A090230.030 A090240.020 A090240.030
DADS0175	The GSFC DADS shall receive from FDF, at a minimum : a. Orbit data b. Attitude data c. Metadata	essential	test	B15.07.00	A090230.000 A090240.020
DADS0190	Each DADS shall receive from the SCF, at a minimum, the following: a. Special products (L1-L4) b. Metadata c. Ancillary data d. Calibration data e. Correlative data f. Documents g. Algorithms	essential	test	T10-01.01.00 T10-01.04.00 T10-01.05.00 T10-02.01.01 B10.00.00 B15.06.00 T10-01.07.00	A090520.000 A090520.020 A090210.100 A090210.110
DADS0220	Each DADS shall accept, at a minimum, the following data types in support of development of initial calibration: a. Instrument calibration data b. Scientific calibration	essential	test	T10-01.01.00	A090110.000 A090120.000 A090130.000 A090110.010 A090120.010 A090130.030 A090140.010

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS0250	Each DADS shall receive, at a minimum, data in the following forms: a. Physical electronic media b. Electronic communications network c. Hardcopy media	essential	test	T12-02.01.00 T12-02.02.00 T12-02.13.00 T12-02.14.00 B12.02.01	A090210.000 A090220.000 A090230.000 A090240.000 A090250.000 A090250.020 A080150.020 A090230.020 A090240.020 A090260.020 A090210.020 A090260.000 A090270.020 A080180.050 A080180.060 A080180.070 A080180.080
DADS0260	Each DADS shall receive non-EOS correlative and ancillary digital data.	essential	test	T15-04.07.01 T15-04.07.08 T15-01.09.01	A090110.000 A090120.000 A090240.000 A090250.020
DADS0281	Each DADS shall be capable of ingesting and storing data to support the instrument science team(s) in: a. Pre-launch checkout of their instruments b. Pre-launch science checkout c. Development of initial calibration information	essential	test	T14-07.09.00 B15.01.00	A090540.000 A090540.010 A090540.020
DADS0290	Each DADS shall check all metadata and data it receives. For each type of data described by the metadata, the data shall be checked for the presence of required fields, and correctness of the data set granule size.	essential	test	B02.01.01 B02.01.02	A090230.050
DADS0290	Each DADS shall check all metadata and data it receives. For each type of data described by the metadata, the data shall be checked for the presence of required fields, error-free input, correctness of the data set granule size, and other checks as required.	essential	test	T10-01.04.00 B15.06.00 T15-01.01.04 T15-01.02.04 T15-01.03.04 T15-01.04.04 T15-01.05.04 T15-01.09.04 T15-02.01.05 T15-02.02.06 T15-02.03.06 T15-02.04.05	A090210.000 A090220.000 A090230.000 A090250.000 A090230.050 A090240.050 A090260.050 A090210.050 A090210.130 A090260.000 A090270.050
DADS0300	Each DADS shall generate status indicating the success or failure of metadata and data consistency checks.	essential	test	T10-01.04.01 B15.06.00 T15-01.01.04 T15-01.02.04 T15-01.03.04 T15-01.04.04 T15-01.05.04 T15-01.09.04 T15-02.01.05 T15-02.02.06 T15-02.03.06 T15-02.04.05	A090210.000 A090220.000 A090230.000 A090250.000 A090230.050 A090240.050 A090260.050 A090210.050 A090210.130 A090260.000 A090270.050

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS0310	Each DADS shall verify that data received came from an approved/authorized source.	essential	test	T15-01.01.02 T15-01.02.02 T15-01.03.02 T15-01.04.02 T15-01.05.02 T15-01.09.02 T15-02.01.03 T15-02.02.04 T15-02.03.04 T15-02.04.03	A090210.000 A090220.000 A090230.000 A090240.000 A090250.000 A090250.020 A090230.050 A090240.050 A090260.050 A090210.050 A090210.130 A090260.000 A090270.050
DADS0350	Each DADS shall generate the following metadata items, at a minimum: a. Unique Granule Id for L0 b. Date and time of storage c. Physical location d. Data check status e. Unique format identifiers	essential	test	B15.08.00 T15-01.01.06 T15-01.02.06 T15-01.03.06 T15-01.04.06 T15-01.05.06 T15-01.09.06	A090210.000 A090220.000 A090230.000 A090250.000 A090230.080 A090240.080 A090260.080 A090210.080 A090210.150 A090210.160 A090260.000 A090270.080
DADS0360	Each DADS shall augment PGS-generated metadata with DADS-generated metadata.	essential	test	T15-01.01.06 T15-01.02.06 T15-01.03.06 T15-01.04.06 T15-01.05.06 T15-01.09.06	A090210.000 A090210.070 A090210.150 A090420.030 A090430.030
DADS0370	Each DADS shall provide the IMS with metadata on newly stored data granules.	essential	test	T12-02.10.00 B13.02.02	A090210.000 A090220.000 A090230.000 A090250.000 A090420.000 A090430.000 A090230.080 A090230.090 A090240.080 A090260.080 A090210.080 A090210.160 A090310.080 A090310.130 A090320.080 A090320.130 A090420.080 A090430.080 A090260.000 A090270.080
DADS0405	Each DADS shall provide the capability to archive multiple versions of selected archive data.	essential	test	B12.02.01	A090210.000 A090230.000 A090250.000 A090230.080 A090240.080 A090260.080 A090210.080 A090210.160 A090260.000 A090270.080

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS0410	Each DADS shall archive the current version of a product, making the preceding version of a product eligible for deletion.	essential	test	B12.02.01	A090210.000 A090230.000 A090250.000 A090230.080 A090240.080 A090260.080 A090210.080 A090210.160 A090260.000 A090270.080
DADS0425	Archive and backup media at each DADS shall have a rated shelf life of at least 10 years as determined by the National Archives and Records Administration (NARA), National Institute for Standards and Technology (NIST), NASA, or a professional or industry organization such as ANSI, the Society of Motion Picture and Television Engineers (SMPTE) or the National Association of Broadcasters (NAB).	essential	test	T12-02.17.00 T12-02.18.00	A080170.000
DADS0430	Each DADS shall provide its operations personnel the capability to manually alter the routing of data sets to physical storage locations.	essential	test	B13.03.02	A080170.000 A080130.000 A080130.030
DADS0435	At each DADS operations personnel shall be able to add new physical volumes and eject physical volumes from the archive for off-line or off-site permanent storage.	essential	test	T12-02.15.00 T12-02.16.00 B12.02.01	A080130.000 A080130.030
DADS0440	Each DADS shall provide storage, at a minimum, for the following EOS data: a. Standard Products b. Associated correlative data sets c. Associated ancillary data sets d. Associated calibration data sets e. Associated metadata f. Documents g. Algorithms h. Format descriptions (e.g., HDF spec.)	essential	test	T12-02.01.00 T12-02.03.00 T12-02.04.00 T12-02.05.00 T12-02.07.00 T12-02.08.00 T12-02.09.00 B12.02.01	A090210.000 A090230.000 A090230.080 A090240.080 A090210.080 A090210.160
DADS0460	Each DADS shall provide storage at a minimum, for non-EOS data required for Standard Product production by the PGS.	essential	test	T12-02.25.00 B12.02.01	A080170.000 A090250.000 A080170.010 A090260.080 A090210.160 A080170.020 A090260.000 A090270.080
DADS0465	The DADS shall provide storage for the following Version 0 data: a. Standard products b. Associated correlative data sets c. Associated ancillary data sets d. Associated calibration data sets e. Associated metadata f. Documents g. Algorithms.	essential	test	T12-02.01.00 T12-02.03.02 T12-02.04.00 T12-02.07.02 T12-02.08.00 B12.02.01 T15-03.10.00	A090110.000 A090120.000 A090130.000 A090210.000 A090110.050 A090120.050 A090130.050 A090140.050 A090210.080 A090210.160
DADS0475	The DADS shall provide storage for the following TRMM data: a. L0-L4 equivalent data products b. Associated correlative data sets c. Associated ancillary data sets d. Associated calibration data sets e. Associated metadata f. Documents g. Algorithms.	essential	test	T12-02.01.00 T12-02.03.03 T12-02.05.00 T12-02.07.01 T12-02.09.00 B12.02.01	A090230.000 A090250.000 A090230.080 A090240.080 A090260.080 A090260.000 A090270.080

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS0487	Each DADS shall be capable of storing EDOS production data sets (Level 0) for at least one year from the date they are ingested.	critical	inspect	T12-02.26.00	A090130.000 A090130.010 A090130.020 A090130.030
DADS0488	Each DADS shall archive the EDOS production data sets (Level 0) received from EDOS, or the equivalent Level 1A data.	essential	test	T12-02.26.01	A090130.000 A090130.010 A090130.020 A090130.030 A090210.160
DADS0490	Each DADS shall archive Level 1B - Level 4 data products.	essential	test	T12-02.26.03	A090210.000 A090210.080
DADS0498	Each designated DADS shall receive standing and retrospective product orders from the IMS.	essential	test	B13.04.02	A100120.000 A100120.060
DADS0500	Each DADS shall receive changes to standing orders from the IMS.	essential	test	B13.04.02	A100120.000 A100120.060 A120320.040
DADS0520	Each DADS shall accept requests for data needed for Standard Product production.	essential	test	B13.03.01	A090110.000 A090120.000 A090120.040 A090110.040
DADS0525	Each DADS shall accept updates/cancellations of data order requests.	essential	test	T12-01.11.00 T12-02.22.09 T12-02.23.07 B13.03.01	A100120.000 A100120.050 A100120.060
DADS0540	Each DADS shall notify the PGS of the receipt of non-EOS data sets required for Standard Product production.	essential	test	B15.06.00 B12.02.01	A090250.000 A090260.020 A090260.000 A090270.020
DADS0550	Each DADS shall notify the PGS of the receipt of EOS data sets required for Standard Product production (e.g., data received from non-collocated DADS).	essential	test	B15.06.00 B12.02.01	A090110.000 A090120.000 A090110.010 A090120.010
DADS0570	Each DADS shall verify product orders from the IMS.	essential	test	B12.02.05 B13.04.02 B13.04.03	A100120.000 A100120.050 A100120.060
DADS0600	Each DADS shall accept requests from the IMS to distribute data archived in the DADS to requesting users.	essential	test	T12-02.22.00 T12-02.23.00 B12.02.05 B13.03.05	A100120.000 A100120.050
DADS0610	Each DADS shall support reprocessing.	essential	test	T12-01.10.00	A090320.000 A090410.000 A090410.010 A090410.030
DADS0660	Each DADS shall maintain a database of orders which shall include at a minimum: priorities, distribution directions, and all other details necessary to process orders including standing and multi-DADS orders.	essential	test	T12-01.05.00 T12-02.22.10 T12-02.23.08 B12.02.05	A100120.000 A100120.050 A100120.060
DADS0690	Each DADS shall support the prioritized retrieval and delivery of data based on the priority information specified in the data retrieval request.	essential	test	T12-01.11.00 T12-02.22.00 T12-02.23.00 B12.02.05	A100120.000 A100120.050 A100120.060
DADS0700	Each DADS shall be capable of complying with data transfer cancellation or delay notifications.	essential	test	B13.03.02	A090320.000 A090420.000 A090430.000 A090420.010
DADS0760	The DADS shall distribute data in approved standard formats including HDF.	essential	test	T12-02.22.00 T12-02.23.00 B12.02.05	A100120.000 A100120.050 A100120.060

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS0770	The DADS shall reformat data sets in one of the approved standard formats including HDF.	essential	test	T12-02.22.06 T12-02.23.04	A090210.000 A090220.000 A090230.000 A090250.000 A090230.080 A090240.080 A090210.080 A090260.000 A090270.080
DADS0780	Each DADS shall have the capability to incorporate additional ingest and data distribution formats and conversion software.	fulfillment	test	T13-01.05.00	A090510.000 A090510.010 A090510.020 A090510.030
DADS0800	Each DADS shall provide the capability to translate input data to the internal ECS format including HDF.	essential	test	T15-01.01.07 T15-01.02.07 T15-01.03.07 T15-01.04.07 T15-01.05.07 T15-01.09.07	A090110.000 A090120.000 A090130.000 A090210.000 A090220.000 A090230.000 A090240.000 A090250.000 A090250.020 A090230.020 A090240.020 A090260.020 A090210.020 A090210.100 A090310.040 A090320.090 A090310.090 A090420.040 A090320.040 A090430.040 A090260.000 A090270.020
DADS0901	The DADS element shall collect the management data used to support the following system management functions: a. Fault Management b. Configuration Management d. Accountability Management e. Performance Management f. Security Management g. Scheduling Management h. Distribution and Ingest Management	essential	test	T13-01.03.00 T13-01.04.00 T13-01.05.00 T13-01.06.00 T13-01.07.00 T13-01.08.00 B13.00.00	A080170.000 A080610.000 A080520.080 A080610.010
DADS0910	Each DADS shall notify the SMC and IMS in the event that data required in connection with an on-demand request does not arrive.	essential	test	T12-01.08.02 B12.04.00	A090260.000
DADS0925	Each DADS shall, in the event of noncompliance (e.g., non-arrival of scheduled data) forward a description of noncompliance to the SMC.	essential	test	T12-01.08.02 B13.03.02	A090210.000 A090220.000 A090230.000 A090240.000 A090250.000 A090250.020 A090230.010 A090240.010 A090260.020 A090210.020 A090260.000 A090270.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS0927	Each DADS shall generate and send to SMC reports of the status of the distribution of data.	essential	test	T12-02.22.10 T12-02.23.08 B13.03.05	A090120.040 A090110.040
DADS0940	Each DADS shall send distribution status to the IMS in response to distribution status requests from the IMS.	essential	test	T12-02.27.01 B13.03.05	A100120.000 A100120.060
DADS0960	Each DADS shall automatically send data distribution status to the IMS upon completion of the distribution process.	essential	test	T12-01.07.00 T12-02.27.02 B13.03.05	A100120.000 A100120.060
DADS1000	The DADS shall receive distribution status requests from the collocated PGS.	essential	test	T12-01.11.00 T12-02.27.01	A090110.000 A090120.000 A090130.000 A090220.000 A090310.000 A090320.000 A090310.050 A090210.170 A090320.100 A090310.100 A090320.050
DADS1010	Each DADS shall send to the requesting PGS or IMS, staging status of requests for retrieval of data products.	essential	test	T12-02.27.03 B13.03.05	A100120.000 A100120.060
DADS1020	Each DADS shall generate data retrieval status to acknowledge the receipt of a product order. The data retrieval status shall indicate the acceptance or rejection of the request. In the event of rejection, the status shall contain an indication of the reason for rejection (e.g., distribution parameters missing, data not present or unreadable).	essential	test	T12-02.27.01 B13.04.02	A100120.000 A100120.060
DADS1030	Each DADS shall generate data distribution status to monitor the progress of the distribution process.	essential	test	T12-02.27.00	A100120.000 A100120.060

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS1070	The DADS shall send data check and storage status to the provider of ingest data.	essential	test	T15-01.01.01	A120310.000
				T15-01.02.01	A090210.000
				T15-01.03.01	A090220.000
				T15-01.04.01	A090230.000
				T15-01.05.01	A090250.000
				T15-01.09.01	A090310.000
				T15-02.01.01	A090320.000
				T15-02.01.02	A090420.000
				T15-02.01.04	A090430.000
				T15-02.01.05	A090540.000
				T15-02.02.01	A120310.020
				T15-02.02.02	A090540.010
				T15-02.02.03	A090540.020
				T15-02.02.05	A090230.050
				T15-02.02.06	A090230.080
				T15-02.03.01	A090240.050
				T15-02.03.02	A090240.080
				T15-02.03.03	A090260.050
				T15-02.03.05	A090260.080
				T15-02.03.06	A090210.050
				T15-02.04.01	A090210.080
				T15-02.04.02	A090210.130
				T15-02.04.04	A090210.160
				T15-02.04.05	A090310.050
				T15-02.06.01	A090320.100
				T15-02.06.02	A090310.100
				T15-03.10.00	A090420.020
					A090420.030
					A090420.050
					A090320.050
					A090430.020
					A090430.030
					A090430.050
					A090260.000
					A090270.050
					A090270.080

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS1080	Each DADS shall maintain a data receipt log.	essential	test	B15.02.00 B15.03.00 B15.06.00 B15.07.00 T13-01.08.08 T15-01.01.01 T15-01.02.01 T15-01.03.01 T15-01.04.01 T15-01.05.01 T15-01.09.01 T15-02.01.01 T15-02.01.02 T15-02.02.01 T15-02.02.02 T15-02.03.01 T15-02.03.02 T15-02.04.01 T15-02.04.02 T15-02.06.01 T15-02.06.02	A090210.000 A090220.000 A090230.000 A090240.000 A090250.000 A090310.000 A090320.000 A090420.000 A090430.000 A090540.000 A090540.010 A090540.020 A090250.020 A090230.020 A090240.020 A090260.020 A090210.020 A090210.100 A090310.040 A090320.090 A090310.090 A090420.020 A090420.030 A090420.050 A090320.040 A090430.020 A090430.030 A090430.050 A090260.000 A090270.020
DADS1085	Each DADS shall maintain a data access log.	essential	test	T11-03.04.01 T11-03.04.02 T11-03.06.01 T11-03.08.00 T13-01.08.09 B13.01.02	A100120.000 A100120.110
DADS1100	Each DADS shall maintain a log of all updates to the local inventory. The log shall be used to generate status reports and, in conjunction with the inventory backup, recreate the local inventory in the event of catastrophic failure.	essential	test	T12-02.07.00 T12-02.08.00 T12-02.17.00 T12-02.19.00 T13-01.08.08 B13.03.02	A090110.000 A090120.000 A090130.000 A090210.000 A090220.000 A090230.000 A090250.000 A090310.000 A090320.000 A090270.090 A090260.000 A090430.060 A090320.060 A090420.060 A090310.110 A090310.060 A090320.110 A090210.170 A090420.000 A090430.000 A090230.090 A090240.090 A090260.090 A090210.090

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS1110	Each DADS shall maintain a data distribution log.	essential	test	T12-02.22.00 T12-02.23.00 T13-01.08.09 B13.03.05	A100120.000 A100120.060
DADS1114	Each DADS shall maintain a log of staging activity.	essential	test	B15.02.00 B15.03.00 B15.06.00 B15.07.00 T12-02.27.00 T13-01.08.08	A080170.000 A080170.010
DADS1160	Each DADS shall provide the IMS with metadata reflecting changes as a result of: a. Purges b. Transfers to other site(s) c. Unexpected loss d. Updates	essential	test	B13.01.03	A090310.000 A090320.000 A090420.000 A090430.000 A090310.080 A090310.130 A090320.080 A090320.130 A090420.080 A090430.080 A120530.000 A120530.010
DADS1180	Each DADS shall provide the collocated PGS with data storage and retrieval capabilities.	essential	test	T12-02.22.00 T12-02.23.00 T12-02.26.00 B12.02.05	A090310.000 A090320.000 A090310.040 A090310.050 A090320.090 A090320.100 A090310.090 A090310.100 A090320.040 A090320.050
DADS1210	Each DADS shall prepare, for output to the collocated PGS, data availability notices.	essential	test	T12-01.07.00 B12.02.04 T15-01.01.01 T15-01.02.01 T15-01.03.01 T15-01.04.01 T15-01.05.01 T15-01.09.01	A090110.000 A090120.000 A090120.040 A090110.040
DADS1230	Each DADS shall be capable of providing temporary storage for a collocated PGS.	essential	test	T12-01.00.00	A090110.000 A090120.000 A090120.040 A090110.040
DADS1300	Each DADS shall display all faults to the system operators.	essential	test	T13-01.03.01 T13-01.03.02 T13-01.03.03	A080610.000 A080610.010 A080610.020
DADS1320	Each DADS shall provide to the SMC fault isolation information at the DADS system and subsystem levels.	essential	test	T13-01.03.01 T13-01.03.02 T13-01.03.03 B13.02.03 B13.03.04 B13.04.03	A080610.000 A080610.010 A080610.020
DADS1330	Each DADS shall provide information to support fault isolation between the DADS and other ECS-unique elements and external interfaces to the LSM.	essential	test	T13-01.03.01 T13-01.03.02 T13-01.03.03 B13.02.03 B13.03.04 B13.04.03	A080610.000 A080610.010 A080610.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS1340	Each DADS shall use tools to analyze system performance.	essential	test	T13-01.04.01	A080610.000 A080520.000 A080520.020 A080520.080 A080610.030
DADS1350	Each DADS shall manage its storage media to eliminate data loss due to long or short term media degradation adhering to applicable guidelines, recommendations, and standards of NARA, NIST, and NASA, or other professional or industry organizations such as ANSI, the Society of Motion Picture and Television Engineers (SMPTE) or the National Association of Broadcasters (NAB).	essential	test	T12-02.19.00 T12-02.20.00	A080170.000 A080170.010
DADS1360	Each DADS shall monitor the status and performance of all storage systems used.	essential	test	T13-01.04.01 T13-01.07.03 B13.01.03 B13.03.02	A080170.000 A080170.010
DADS1370	Each DADS shall provide a mechanism for statistically monitoring both the raw and corrected bit error rate (BER) of storage media in the archive.	essential	test	B15.09.01 T13-01.01.02	A090110.000 A090120.000 A090130.000
DADS1380	Each DADS shall monitor data transfer between external (non-ECS) elements and the DADS.	essential	test	T13-01.02.01 T13-01.02.02	A090110.000 A090120.000 A090130.000 A090430.010
DADS1390	Each DADS shall monitor data transfer between elements of the ECS and the DADS.	essential	test	B15.02.00 T13-01.02.04 T13-01.02.03	A090110.000 A090120.000 A090130.000
DADS1400	Each DADS shall notify the originating source of the need to retransmit data in the event of transmission difficulties.	essential	test	T15-04.07.11 T15-01.01.02 T15-01.02.02 T15-01.03.02 T15-01.04.02 T15-01.05.02 T15-01.09.02 T15-02.01.03 T15-02.01.06 T15-02.02.04 T15-02.02.07 T15-02.03.04 T15-02.03.07 T15-02.04.03 T15-02.04.06 T15-03.10.08	A090210.000 A090220.000 A090230.000 A090240.000 A090250.000 A090250.020 A090230.040 A090240.040 A090260.040 A090210.040 A090210.120 A090260.000 A090270.040
DADS1470	Each DADS shall manage element resource utilization.	essential	demo	T10-03.06.00	A090110.000 A090120.000 A090130.000 A090310.000 A090320.000 A090310.040 A090320.090 A090310.090 A090320.040
DADS1472	Each DADS shall contain the appropriate capacity to respond to contingencies, scheduling problems, and peak loads.	critical	demo	B15.02.00 B15.03.00 B15.04.00	A120610.000 A080220.000 A080230.000 A120610.010 A120610.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS1510	Each DADS shall ensure that IMS acknowledges receipt of metadata on all products stored in the DADS.	essential	demo	B15.06.00 T15-01.01.03 T15-01.02.03 T15-01.03.03 T15-01.04.03 T15-01.05.03 T15-01.09.03	A090110.000 A090120.000 A090130.000 A090210.000 A090220.000 A090230.000 A090250.000 A090230.080 A090240.080 A090260.080 A090210.080 A090260.000 A090270.080
DADS1520	Each DADS shall provide an FSMS. Storage shall be based on a hierarchy of devices and media, with location-transparent access to the files.	essential	demo	T12-02.26.00	A090110.000 A090120.000 A090130.000 A090250.000 A090260.080 A090260.000 A090270.080
DADS1530	Each DADS shall maintain a file directory of all files under its control.	essential	demo	T12-02.05.00 T11-03.05.00 T11-03.08.00 T12-02.26.00	A080170.000 A080170.010
DADS1540	In case of corruption or catastrophic failure, capabilities for recovering the file directory shall be provided.	essential	demo	T12-02.19.00 T12-02.20.00 T13-01.03.04	A080150.000 A080150.020
DADS1550	Operations/systems personnel shall be able to access, list, or modify the contents of the file directory in a special privileged mode.	essential	demo	T11-03.01.00 T11-03.02.00 T11-03.03.00 T11-03.05.00 T12-02.15.00	A080170.000 A080170.010
DADS1610	The FSMS shall provide for continued performance, albeit in a degraded mode, when a device (e.g., disk or cartridge drive, operator's console) fails.	essential	demo	B15.03.00 T11-03.01.09 T13-01.03.04	A080130.000 A080150.000 A080150.020 A080120.020 A080120.030 A080120.000
DADS1620	At each DADS tools shall be available for operations/systems/maintenance personnel to monitor performance, carry out maintenance, and alter operating parameters.	essential	demo	B15.02.00 T13-01.04.01	A080160.000 A080320.000 A080320.010
DADS1630	At each DADS tools shall be provided for recovery of data from failed media and devices.	essential	demo	T12-02.19.00 T12-02.20.00 T13-01.03.04	A080150.000 A080150.020
DADS1640	The DADS shall support the number of files derivable from Appendix C, with the ability to expand to match growth.	essential	demo	B15.11.01	A120610.000 A120610.010 A120610.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS1700	Where appropriate, the DADS shall comply with the evolving guidelines and standards emerging from the IEEE-CS MSS Reference Model.	fulfillment	demo	T11-01.00.00	A090110.000 A090120.000 A090130.000 A090210.000 A090220.000 A090230.000 A090250.000 A090310.000 A090320.000 A090420.000 A090430.000 A090230.080 A090240.080 A090260.080 A090210.080 A090310.050 A090320.100 A090310.100 A090420.050 A090320.050 A090430.050 A090260.000 A090270.080
DADS1710	The DADS shall comply with evolving guidelines and standards in such areas as file storage, storage management, and backup where appropriate.	fulfillment	demo	B15.11.00	A080170.000 A080170.010
DADS1720	The FSMS at each DADS shall be based on published and open architectures which fully describe the physical organization and structures of files.	essential	demo	B15.11.00	A090110.000 A090120.000 A090130.000 A090210.000 A090220.000 A090230.000 A090250.000 A090230.080 A090240.080 A090260.080 A090210.080 A090260.000 A090270.080
DADS1730	The DADS shall be developed using file storage management systems that have configuration-controlled application programming interfaces (APIs) that will allow the development of DAAC-unique file storage management services operated independently of the delivered ECS DADS services.	essential	demo	B15.11.00	A090110.000 A090120.000 A090130.000 A090210.000 A090220.000 A090230.000 A090250.000 A090230.080 A090240.080 A090260.080 A090210.080 A090260.000 A090270.080
DADS1780	Each DADS shall provide the capability to store as a single entity logically grouped sets of data.	essential	demo	T12-02.26.00	A090210.000 A090230.000 A090250.000 A090230.080 A090240.080 A090260.080 A090210.080 A090210.160 A090260.000 A090270.080

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS1791	Each DADS shall have the capability to mount archival media via automated means.	essential	demo	T12-02.22.00 T12-02.23.00	A090110.000 A090120.000 A090130.000 A090210.000 A090220.000 A090230.000 A090250.000 A090310.000 A090320.000 A090420.000 A090430.000 A090230.080 A090240.080 A090260.080 A090210.080 A090310.050 A090320.100 A090410.020 A090310.100 A090410.040 A090420.050 A090320.050 A090430.050 A090260.000 A090270.080
DADS1795	Each DADS shall update internal file directories with the unique Data set ID.	essential	demo	T12-02.05.00	A090310.000 A090320.000 A090420.000 A090430.000 A090320.110 A090310.060 A090310.110 A090420.060 A090320.060 A090430.060
DADS1800	Each DADS shall maintain data storage inventories defining the physical location of files.	essential	demo	T12-02.01.00 T12-02.03.00 T12-02.04.00 T12-02.05.00 T12-02.07.00 T12-02.08.00	A090110.000 A090120.000 A090130.000 A090210.000 A090230.000 A090250.000 A090310.000 A090320.000 A090420.000 A090430.000 A090230.080 A090240.080 A090260.080 A090210.080 A090210.160 A090320.110 A090310.060 A090310.110 A090420.060 A090320.060 A090430.060 A090260.000 A090270.080

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS1805	The DADS shall provide an inventory system capable, at a minimum, of the following: a. Accepting the number of new inventory entries, one per granule, for the number of granules per day as specified in Appendix C b. Uniquely identifying each data granule c. Tracking the physical location of each data granule.	essential	demo	T12-02.07.00 T12-02.08.00	A120610.000 A090210.000 A090230.000 A090250.000 A120610.010 A090230.080 A090240.080 A090260.080 A090210.080 A090210.160 A090260.000 A090270.080
DADS1806	Each DADS shall provide the capability of retrieving any data granule stored in the archives.	essential	demo	T11-03.06.01 T12-02.22.00 T12-02.23.00	A100120.000 A100120.050 A100120.060
DADS1850	Each DADS shall utilize the configuration management toolkit provided by the SMC.	essential	demo	T13-01.05.01 T13-01.05.02 T13-01.05.03 T13-01.05.04	A090530.000 A090530.020
DADS1860	Each DADS shall, in conjunction with the SMC, provide configuration management for its internal resources.	essential	demo	T10-02.01.02 B10.01.02	A090530.000 A090530.020
DADS1950	Each DADS shall access, via the system database at the SMC, the allocation of ground event functions and capabilities to each site/element.	essential	demo	T10-03.01.00	A090530.000 A080230.000 A090530.020 A080230.030
DADS1960	Each DADS shall access, from the SMC via the system database, the priorities used in scheduling ground events.	essential	demo	T12-01.01.00	A090540.000 A080230.000 A090540.010 A090540.020 A080230.030
DADS1970	Each DADS shall access from the SMC, via the system database, the product thread information for each standard and quick-look product generated by EOSDIS.	essential	demo	T12-01.03.00	A080230.000 A080230.030
DADS1980	Each DADS shall receive from the SMC scheduling directives for system level, site/element-to-site/element, testing, and simulation activities.	essential	demo	B15.04.01	A080210.000 A080230.000 A080230.030 A080210.010
DADS2000	Each DADS shall receive from the SMC scheduling directives in response to emergency situations.	critical	demo	B15.04.02	A090530.000 A080230.000 A090530.020 A080230.030
DADS2010	Each DADS shall receive from the SMC schedule adjudication directives.	essential	demo	T12-01.01.00 B15.04.01	A090530.000 A090530.020
DADS2020	Each DADS shall have the capability to receive data availability schedules at a minimum, from: a. EDOS c. ADCs e. Other DADS f. TRMM (SDPF)	essential	demo	T12-01.07.00 B15.04.03	A120510.000 A090110.000 A090120.000 A090130.000 A090220.000 A090230.000 A090240.000 A090250.000 A120510.010 A120510.030 A090250.010 A090230.010 A090240.010 A090260.010 A120510.020 A090260.000 A090270.010

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS2030	Each DADS shall maintain a list/schedule of data to be received from EDOS.	critical	demo	T12-01.01.00 B15.02.00	A090130.000 A090130.010 A090130.020 A090130.030
DADS2040	Each DADS shall insure that data sent by EDOS and SDPF has been received and validated.	essential	demo	T15-01.01.01 T15-01.02.01 T15-01.03.01 T15-01.04.01 T15-01.05.01 T15-01.07.01 T15-01.07.02 T15-01.09.01 T15-02.01.01 T15-02.01.02 T15-02.02.01 T15-02.02.02 T15-02.02.03 T15-02.03.01 T15-02.03.02 T15-02.03.03 T15-02.04.01 T15-02.04.02	A090110.000 A090120.000 A090130.000
DADS2060	Each DADS shall communicate with the EDOS to indicate its readiness to accept data.	essential	demo	B15.02.00 T15-01.01.01 T15-01.02.01 T15-01.03.01 T15-01.04.01 T15-01.05.01 T15-01.09.01 T15-02.01.01 T15-02.01.02 T15-02.02.01 T15-02.02.02 T15-02.02.03 T15-02.03.01 T15-02.03.02 T15-02.03.03 T15-02.04.01 T15-02.04.02	A090130.000 A090130.010 A090130.020 A090130.030
DADS2090	Each DADS shall reevaluate its schedule after receiving new orders from the IMS.	essential	demo	T12-01.01.00 B12.02.02 B12.03.00	A080230.000 A080230.030
DADS2110	The DADS shall provide scheduling information to the SMC.	essential	demo	T12-01.01.00	A080230.000 A080230.010 A080230.030
DADS2120	The DADS shall have access to the system wide scheduling information. Such information includes, at a minimum, ESDIS Policies and Procedures regarding instrument and ground event scheduling, other element plans and schedules, element allocations of ground event functions and capabilities, product thread information, and scheduling directives for testing, maintenance, and emergency situations.	essential	demo	T12-01.01.00	A080210.000 A080230.000 A080230.030 A080210.010
DADS2160	Each DADS shall maintain a list/schedule of standing orders.	essential	demo	T12-01.05.00	A100120.000 A100120.060
DADS2170	Each DADS shall maintain a list/schedule of retrospective orders.	essential	demo	T12-01.05.00	A100120.000 A100120.060

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS2180	Each DADS shall maintain a list/schedule of reprocessed data.	essential	demo	T12-01.10.00	A090310.000 A090320.000 A090420.000 A090430.000 A090320.110 A090310.060 A090310.110 A090420.060 A090320.060 A090430.060
DADS2190	Each DADS shall maintain a list of products which could not be delivered electronically (e.g., workstation off-line).	essential	demo	T12-02.22.00	A080170.000 A080170.010 A080170.020
DADS2200	Each DADS shall maintain a list of data which requires some form of data manipulation such as subsetting.	essential	demo	T12-02.22.00 T12-02.23.00 B12.02.01	A090310.000 A090320.000 A090320.100 A090310.100
DADS2210	Each DADS shall provide tools for the creation and manipulation of its plans/schedules.	essential	demo	T12-01.01.00 T12-01.02.00 T12-01.03.00 T12-01.04.00 T12-01.05.00 T12-01.06.00 T12-01.12.00	A080210.000 A080210.010
DADS2220	Each DADS shall provide tools for manually overriding any of its schedules with other elements.	essential	demo	T12-01.01.00 T12-01.02.00 T12-01.03.00 T12-01.04.00 T12-01.05.00 T12-01.06.00 T12-01.12.00	A080210.000 A080210.010
DADS2230	Each DADS shall inform the collocated PGS of any anticipated resource availability conflicts.	essential	demo	T12-01.03.00 T10-03.04.01 T12-01.07.00 T12-01.08.00 T12-01.12.00 B12.02.01 B12.03.00	A080410.000 A080410.030
DADS2270	Each DADS shall provide, on a scheduled basis, an off-site backup copy of all EOS data which would be impossible or difficult to recover in case of loss (e.g., ancillary data, metadata, command history, algorithms, engineering data, calibration data, systems and applications software, selected data products, depending on need).	critical	demo	T12-02.17.00 T12-02.18.00 B12.02.06	A080170.000 A080170.010 A080170.020
DADS2276	Each DADS shall have the capability to restore its archive by storing a backup copy of EOS data or backup copy of information required to regenerate the data.	critical	demo	T12-02.19.00 T12-02.20.00 B12.02.06	A080150.000 A080150.020
DADS2300	Each DADS shall provide a capability for local and offsite backup/restore of system files.	critical	demo	T12-02.19.00 T12-02.20.00	A080170.000 A080170.010 A080170.020
DADS2302	Offsite and local backup media shall be based on published, open, and non-proprietary formats which fully describe the physical organization and structure of files.	essential	demo	T12-02.17.00 T12-02.18.00	A080170.000 A080170.010 A080170.020
DADS2315	Each DADS shall be capable of providing access to data to support the instrument science team(s) in: a. Pre-launch checkout of their instruments b. Pre-launch science checkout c. Development of initial calibration information.	critical	demo	B15.05.00 T11-03.04.00 T11-03.06.00 T11-03.08.00 B13.01.02	A100210.000 A100220.000 A100210.030 A100220.030

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS2320	Each DADS shall send to the IMS, at a minimum, the following: a. Metadata b. Documentation c. Product status dialog	essential	demo	B15.10.03	A100110.000 A100110.060 A100110.070 A100110.100
DADS2330	Each DADS shall send to the PGS, at a minimum, the following: b. L0-L4 d. Metadata e. Ancillary data f. Calibration data g. Algorithms h. Schedules i. Status k. Special data sets l. Non-EOS science data from ADCs/ODCs	essential	demo	T10-01.01.01 T10-02.01.01 B15.02.00 B15.10.00	A090110.000 A090120.000 A090130.000
DADS2340	Each DADS shall send to remote DAACs, at a minimum, the following: a. L0-L4 b. Metadata c. Ancillary data d. Calibration data e. Correlative data f. Documents g. Algorithms	essential	demo	B15.02.00 B15.10.00	A120110.000 A120110.010
DADS2345	Each DADS shall send to ADCs, at a minimum, the following: a. L0-L4 b. Metadata c. Ancillary data d. Calibration data e. Correlative data f. Documents g. Algorithms	essential	demo	B15.10.00 T15-04.08.00	A100140.000 A120520.000 A090110.000 A090120.000 A090130.000 A120540.010 A120540.020 A120540.000
DADS2370	Each DADS shall send to the user, at a minimum, the following: a. L0-L4 b. Special products (L1-L4) c. Metadata d. Ancillary data e. Calibration data f. Correlative data g. Documents h. Algorithms i. Planning and scheduling information	essential	demo	B15.10.00 B13.02.02 B13.03.05 B13.04.02	A100110.000 A100120.000 A100120.050
DADS2380	Each DADS shall send to the SCF, at a minimum, the following: a. L0-L4 b. Special products (L1-L4) c. Metadata d. Ancillary data e. Calibration data f. Correlative data g. Documents h. Algorithms	essential	demo	B15.10.00	A100210.000 A100220.000 A100210.010 A100210.030 A100220.010 A100220.030
DADS2410	Each DADS shall distribute data from the archive in response to receipt of a product order from the IMS.	essential	demo	B15.10.00 T12-01.11.00 T12-02.22.03 B13.04.02	A100120.000 A100120.050 A100120.060
DADS2430	Each DADS shall be capable of distributing any data granule stored in the archive.	essential	demo	B15.10.09 T12-02.22.00 T12-02.23.00	A100120.000 A100120.050 A100120.060

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS2450	Each DADS shall distribute data to elements of EOSDIS and approved non-EOSDIS data destinations.	essential	demo	B15.10.00 T12-02.22.00 T12-02.23.00 B12.02.05	A120110.000 A120120.000 A120230.000 A120240.000 A120310.000 A120520.000 A120110.010 A120110.020 A120110.030 A120120.010 A120120.020 A120610.030 A120610.040 A120250.010 A120250.020 A120610.060 A120230.030 A120240.010 A120310.020 A120420.010 A120540.010 A120540.020 A120540.000
DADS2460	Each DADS shall have a manual override function capable of altering the priority of a distribution request.	essential	demo	T12-02.22.11	A100120.000 A100120.050 A100120.060
DADS2480	Each DADS shall distribute data based upon entries in the standing and the retrospective order distribution list.	essential	demo	B15.10.00 T12-02.22.00	A100120.000 A100120.060
DADS2490	Each DADS shall distribute data using a variety of approved high density storage media such as : a. 8 mm tape b. 4 mm DAT c. 3480/3490 tape d. CD ROM e. 6250 tape	essential	demo	T12-02.23.00	A100120.000 A100120.080
DADS2510	Each DADS shall copy data to the class of physical media specified in the product order from the IMS.	essential	demo	T12-02.23.00 B13.04.02	A100120.000 A100120.080
DADS2530	The DADS shall be capable of distributing by physical media to meet user demand.	essential	demo	T12-02.23.00 B13.04.02	A120620.000 A120620.020
DADS2580	Each DADS shall distribute data electronically using a variety of networks and methods including FAX.	essential	demo	T12-02.22.00	A100120.000 A100120.080

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS2675	Each DADS shall maintain a log of all transmission problems, take internal corrective action, and notify SMC when network performance begins to impact distribution effort adversely.	essential	demo	T12-02.22.00 T13-01.04.01	A090110.000 A090120.000 A090130.000 A090210.000 A090220.000 A090230.000 A090240.000 A090250.000 A090310.000 A090320.000 A090420.000 A090430.000 A090250.020 A090230.040 A090240.040 A090260.040 A090210.040 A090210.120 A090310.040 A090320.090 A090310.090 A090420.020 A090320.040 A090430.020 A090260.000 A090270.040
DADS2770	Upon receipt and approval of a request, the designated DADS shall make stored data products available for delivery to the requester within 24 hours for data distributed on physical media.	fulfillment	demo	T12-02.22.00	A120620.000 A120620.020
DADS2778	Each DADS shall be capable of receiving and archiving three days' worth of data (see Appendix C) in any given day.	essential	demo	T12-02.23.00	A120610.000 A120610.010
DADS2780	Each DADS shall be capable of ingesting data at the maximum output bandwidth of the EDOS.	essential	demo	T12-02.26.00	A120610.000 A120610.010 A120610.020
DADS2900	Each DADS shall provide archival capacity for current volume requirements plus one year. Volume requirements are specified in Appendix C.	essential	demo	B15.01.00	A120610.000 A120610.010
DADS2910	Archival storage at each DADS shall be field-expandable.	essential	demo	T12-02.26.00	A080170.000 A080170.010 A080170.020
DADS2950	In case of failure of the automated system, archive media must be capable of being manually mounted at each DADS.	critical	demo	B15.11.01	A080150.000 A080150.020
DADS3000	To support archival data integrity, the bit error rate after correction shall be less than 1 in 10 to the 12th.	essential	demo	T12-02.26.05	A090110.000 A090120.000 A090130.000
DADS3010	Archival and backup media at each DADS shall have a manufacture-rated shelf life of at least 10 years when stored in a controlled environment.	essential	inspect	T12-02.26.06	A080170.010 A080170.020
DADS3040	At each DADS backup media shall be removable from the DADS site (e.g., for safe off-site storage).	essential	inspect	B15.11.05	A080170.010 A080170.020
DADS3055	At each DADS all backup media shall be capable of being mounted automatically where appropriate, with the provision for manual failover.	essential	demo	T12-02.18.00	A080170.010 A080170.020
DADS3090	Each DADS shall be capable of 200% expansion in throughput and archive capacity without architecture or design change. This expansion capacity shall apply to the total of the at-launch requirement plus the yearly growth requirement specified in Appendix C.	fulfillment	analysis	T12-02.17.00 T12-02.18.00	A080170.010 A080170.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
DADS3100	Each DADS shall be capable of transmitting data over communications network in support of data production requests at the data rate specified in Appendix C and in support of data distribution requests at a rate equivalent to daily product volume (L1-L4).	essential	test	B15.11.01	A120620.020
DADS3110	Each DADS shall be capable of distributing data via physical media at a rate equivalent to the rate data are ingested at that DADS.	essential	demo	B15.11.03	A120620.020
DADS3120	Each DADS shall distribute product QA data produced at the collocated PGS within 1 hour from the time it is ready.	fulfillment	demo	B15.11.03	A120620.020
DADS3125	Each DADS shall make archive data, associated with a pre-defined ECS standard format, that is requested for communications network delivery, available to the network in that ECS standard format within an average of 2 minutes after the receipt of a request for that data.	fulfillment	demo	B15.11.03 T12-02.22.03	A120610.000 A120620.000 A120610.010 A120610.020 A120620.010 A120620.020 A120620.030
DADS3126	Each DADS shall make archive data, associated with a pre-defined ECS standard format, that is requested for communications network delivery available to the network in a different ECS standard format within an average of 5 minutes after the request for that data.	fulfillment	demo	B15.11.03	A120610.000 A120620.000 A120610.010 A120610.020 A120620.010 A120620.020 A120620.030
DADS3135	The DADS shall have the capability to support the transaction rate as specified in Table 7-4.	essential	demo	B15.02.00	A120610.000 A120620.000 A120610.010 A120610.020 A120620.010 A120620.020 A120620.030
DADS3140	The DADS shall be developed with configuration-controlled application programming interfaces (APIs) that will be capable of supporting development of DAAC-unique data ingest services operated independently of the delivered ECS DADS services.	essential	demo	B15.06.00	A090210.000 A090220.000 A090230.000 A090240.000 A090250.000 A090250.020 A090230.020 A090240.020 A090260.020 A090210.020 A090260.000 A090270.020
DADS3150	The DADS shall be developed with configuration-controlled application programming interfaces (APIs) that will be capable of supporting development of DAAC-unique data distribution services operated independently of the delivered ECS DADS services.	fulfillment	demo	B15.10.00	A100120.000 A100110.090 A100120.090
EOC-0040	The EOC shall interface with EDOS for coordinating EDOS-provided services required by the EOC.	critical	test	T14-02.02.02 B15.01.00 B15.02.00	A120120.000 A120120.020
EOC-2010	The EOC shall accept from the FDF planning and scheduling information for the EOS spacecraft and instruments, which includes, at a minimum, the following: a. Predicted orbit data including predicted ground track b. EOS spacecraft UAV data c. PSATs d. Spacecraft maneuver information	critical	test	T14-04.01.05	A120410.020 A110120.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
EOC-2030	The EOC shall store and maintain EOS planning and scheduling information, which includes, at a minimum, the following: c. Predicted availability of the spacecraft resources d. Baseline activity profile for each applicable instrument e. Planning and scheduling information received from the FDF f. Preliminary resource schedules, including TDRSS contact times g. Detailed activity schedules, including mission critical	critical	demo	T14-04.01.00 T14-04.02.00 T14-04.06.00 T14-04.07.00	A120410.020 A110120.020 A110120.030 A110120.040 A110120.050 A110120.060 A110220.020 A110220.030 A110220.040
EOC-2040	The EOC shall provide to any authorized users (including the ICCs) read-only access to EOS planning and scheduling information.	essential	inspect	T14-04.01.00	A110120.030 A110120.040 A110130.010 A110220.010 A110310.010 A110330.010
EOC-2045	The EOC shall provide to any authorized users (including the ICCs) a common set of capabilities for formulating requests and for visualizing EOS planning and scheduling information.	essential	demo	T14-04.01.00	A110120.030 A110120.040 A110120.050 A110130.010 A110310.010
EOC-2160	The EOC shall provide plans and schedules to the IMS.	critical	test	T14-04.01.00 B15.01.00	A110120.060 A110220.040
EOC-2170	The EOC shall be capable of planning and scheduling observations for which time may be specified in fixed or variable terms.	critical	demo	T14-04.01.00	A110120.030 A110120.040 A110130.010 A110220.020 A110310.010
EOC-2180	The EOC shall be capable of planning and scheduling observations for those EOS instruments whose operations may be periodic, intermittent, or continuous.	critical	demo	T14-04.01.00	A110120.030 A110120.040 A110130.010 A110220.020 A110310.010
EOC-2190	The EOC shall be capable of planning and scheduling coordinated observations involving multiple instruments.	critical	demo	T14-04.01.00	A110120.040 A110130.010
EOC-2210	The EOC shall have the capability to generate plans and schedules in both human readable and machine usable forms.	critical	inspect	T14-04.01.00	A110120.060 A110220.030 A110220.040
EOC-2240	The EOC shall reintroduce applicable requested activities in its planning and scheduling function when the activity did not occur due to a deviation from the schedule.	critical	test	T14-04.01.00	A110120.040 A110220.020
EOC-2250	The EOC shall be capable of performing its planning and scheduling function in batch and incremental interactive-user modes.	critical	demo	T14-04.07.00	A110120.040 A110220.020
EOC-2260	The EOC shall provide "what-if" capabilities for planning and scheduling analysis, and provide them to authorized users, including the ICCs.	critical	demo	T14-04.01.00	A110120.040 A110120.050
EOC-2270	The EOC shall accept an instrument resource profile or instrument resource deviation list (when a resource profile exists for the instrument) from each ICC.	critical	demo	T14-04.02.16	A110120.030 A110120.040
EOC-2272	For the instruments that have resource deviations lists, the EOC shall build instrument resource profiles by combining the resource deviation lists with the respective baseline resource profiles.	critical	test	T14-04.02.00	A110120.040
EOC-2280	At least once each week, the EOC shall generate for each spacecraft a preliminary resource schedule that describes all operations currently planned for the following target week.	critical	test	T14-04.06.00	A110120.060

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
EOC-2290	Whenever the ICCOs instrument resource profile cannot be integrated into a preliminary resource schedule, the EOC shall provide the ICC with a notification that includes, at a minimum, an identification of the conflicting activities and the source of conflict.	critical	demo	T14-04.06.00	A080220.000 A080220.030 A110120.060
EOC-2300	The EOC shall build or update the preliminary resource schedule based on the following, at a minimum: a. Existing preliminary resource schedules, if any b. Instrument resource profiles c. Spacecraft subsystems resource profile e. Spacecraft operations constraints f. TDRSS schedule	critical	test	T14-04.06.00	A110120.040
EOC-2310	The EOC shall build a preliminary resource schedule by performing the following: a. Integrating the spacecraft subsystems resource profile and individual instrument resource profiles b. Determining if required resources, including SN resources, are within limits	critical	test	T14-04.06.00	A110120.040
EOC-2320	The preliminary resource schedule shall include, at a minimum, the following: a. Activity or DAR identifiers b. Resource availability and usage requirements c. Time constraints and alternatives for planned activities d. TDRSS schedule	critical	inspect	T14-04.06.00	A110120.040 A110120.050
EOC-2350	The EOC shall provide the preliminary resource schedule to the ICCs upon generation.	critical	demo	T14-04.06.02	A110120.060
EOC-2370	The EOC shall generate TDRSS schedule requests based on the data rate profiles of all the instruments and spacecraft subsystems.	critical	test	T14-04.05.00	A110120.050 A110220.030
EOC-2400	The EOC shall submit the TDRSS schedule requests to the NCC.	critical	demo	T14-04.05.00	A110120.040 A110120.050 A110220.030
EOC-2405	The EOC shall accept the forecast TDRSS schedule from the NCC.	critical	demo	T14-04.05.00	A110120.050 A110220.030
EOC-2410	The EOC shall accept from the NCC notification of rejection along with the reason for rejection, when all or a portion of the TDRSS schedule request cannot be accommodated.	critical	test	T14-04.05.00	A110120.050
EOC-2420	In response to the rejection of a TDRSS schedule request, the EOC shall have the capability to modify the request for resubmission to the NCC.	critical	demo	T14-04.05.00	A110120.050
EOC-2460	The EOC shall be capable of generating or updating a spacecraft subsystem activity list based on at a minimum the following: a. Existing detailed activity schedule b. Preliminary resource schedule c. Spacecraft subsystem activities identified after the preliminary resource schedule has been generated	critical	test	T14-04.03.00	A110120.030
EOC-2480	The EOC shall accept from each ICC an instrument activity list or an instrument activity deviation list (when an activity profile exists for the instrument) and any updates thereto.	critical	demo	T14-04.02.00	A110120.030 A110120.040
EOC-2482	For the instruments that have instrument activity deviation lists, the EOC shall build the instrument activity lists by combining the instrument activity deviation lists with the respective baseline activity profiles.	critical	test	T14-04.02.00	A110120.040
EOC-2490	For each day the EOC shall be capable of generating or updating a detailed activity schedule for each spacecraft and its instruments, nominally covering the next 7 days.	critical	test	T14-04.07.00	A110120.060

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
EOC-2510	The EOC shall generate a detailed activity schedule for the spacecraft and its instruments by: a. Integrating the spacecraft subsystem activity list and individual instrument activity lists b. Determining if the aggregate resource requirements are within limits d. Ensuring that all the sequencing constraints among the proposed activities are respected	critical	test	T14-04.07.00	A110120.060 A110220.040
EOC-2540	The EOC shall notify the ICC of any instrument activities that cannot be integrated into a detailed activity schedule.	critical	test	T14-04.07.00	A110120.060
EOC-2550	The detailed activity schedule shall include, at a minimum, the following: a. Instrument activities b. Spacecraft activities necessary to support all instrument activities c. Spacecraft activities necessary for the spacecraft subsystem maintenance d. Spacecraft resource requirements for each activity	critical	test	T14-04.07.00	A110120.060 A110220.040
EOC-2620	The EOC shall provide the ICC with the detailed activity schedule and any updates upon generation.	critical	test	T14-04.07.00	A110120.060 A110220.040
EOC-3020	The EOC shall accept from the ICC instrument loads, SCC-stored instrument commands, and SCC-stored instrument tables as well as the associated information that includes at a minimum the following: a. Instrument identifier b. Schedule identifier, if applicable c. Identification of commands that could impact spacecraft or instrument safety (i.e., critical commands)	critical	test	T14-05.04.00	A110120.040 A110130.010
EOC-3024	The EOC shall validate the expected resource usage.	critical	test	T14-02.02.02	A110110.020 A110120.050 A110220.030
EOC-4005	The EOC shall be capable of transmitting commands to the EOS spacecraft via EDOS using the: a. SN b. GN, DSN, WOTS (for contingency or emergency operations)	critical	test	T14-06.05.00	A110210.030
EOC-4008	The EOC shall be capable of transmitting commands via Ecom.	critical	test	T14-06.05.00	A110210.030
EOC-4010	For each spacecraft and its instruments, the EOC shall prepare uplink data that conform to the CCSDS Telecommand Standard.	critical	analysis	T14-06.05.00	A110210.030
EOC-4015	The EOC shall provide the capability to build real-time commands based on operator input and validate the generated commands.	critical	test	T14-06.04.00	A110210.030
EOC-4017	The EOC shall receive from the ICC instrument real-time command groups destined for the EOS spacecraft and instruments.	critical	demo	T14-06.04.00	A110210.040
EOC-4018	The EOC shall validate instrument real-time command groups.	critical	demo	T14-05.01.00	A110210.040
EOC-4020	The EOC shall merge the real-time commands supplied by the spacecraft operator, command groups, and the spacecraft and instrument memory loads into one uplink stream.	critical	test	T14-06.05.00	A110210.030
EOC-4060	The EOC shall provide the capability to exchange messages with the NCC, which include at a minimum status and reconfiguration messages.	critical	test	T14-02.02.04	A110120.050
EOC-4100	The EOC shall provide the capability to control the uplink of critical commands by requiring a second positive response from the operator.	critical	demo	T14-06.03.03	A110210.030

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
EOC-4120	The EOC shall provide the capability to verify via telemetry the successful receipt of all commands by the spacecraft and instruments.	critical	test	T14-06.05.09	A110210.030
EOC-4130	The EOC shall provide the capability to receive and evaluate command transmission status information from EDOS.	critical	demo	T14-06.05.09	A110210.030
EOC-4140	The EOC shall generate command-related event messages for display and for history logging to include: a. Command uplink status b. Command verification status	critical	demo	T14-06.05.00	A110210.030
EOC-4160	The EOC shall maintain a record of the uplink status of all spacecraft and instrument memory loads and real-time commands.	critical	demo	T14-06.03.00	A110210.030
EOC-4166	The EOC shall provide the ICC with instrument uplink status, which includes at a minimum the following: a. Receipt at the EOC b. Validation status c. Receipt at the spacecraft and instrument	critical	test	T14-06.03.00	A110210.040
EOC-4200	The EOC shall support several uplink rates to the spacecraft, which include at a minimum the following: a. 10 kilobits per second (kbps) (SSA uplink) b. 1 kbps (SMA uplink) c. 125 bits per second (bps) (SSA uplink during contingency operations) d. 2 kbps (emergency operations via S-band DSN link)	critical	test	T14-06.05.00	A110210.030
EOC-5010	The EOC shall receive from EDOS the following telemetry data types in CCSDS packets containing: a. Real-time spacecraft and instrument housekeeping data including instrument and spacecraft housekeeping b. Spacecraft recorder housekeeping data c. SCC memory dump data	critical	analysis	T14-07.03.00	A110210.020
EOC-5030	The EOC shall provide the capability to receive and process, non-telemetry data, which includes at a minimum the following: a. Messages from the NCC b. Monitor blocks from the DSN, GN, and WOTS c. Status messages from EDOS	critical	test	T14-02.02.00	A110210.020
EOC-5045	The EOC shall be capable of supporting all EOS telemetry formats for spacecraft and instrument housekeeping data.	critical	test	T14-07.01.00	A110210.020
EOC-5050	The EOC shall provide the capability to receive and report data quality information with the incoming CCSDS packets as provided by EDOS.	critical	test	T14-07.01.06	A120410.020 A110210.020
EOC-5070	The EOC shall provide the capability to detect and report gaps in the telemetry data it receives.	critical	test	T14-07.02.00	A110210.020
EOC-5080	The EOC shall provide the capability to decommutate spacecraft and instrument housekeeping data.	critical	test	T14-07.03.00	A110210.020 A110320.020
EOC-5090	The EOC shall perform the necessary engineering unit conversion and digital and discrete state determination on the decommutated housekeeping data.	critical	test	T14-07.03.00	A110210.020 A110320.020 A110320.030
EOC-5100	The EOC shall provide the capability to perform limit checking on all non discrete parameters within the real-time telemetry, flagging all parameters that have limit violations.	critical	test	T14-07.04.00	A110210.020 A110320.020
EOC-5110	The EOC shall provide the capability to generate an event message whenever a predetermined number of limit violations for a parameter is detected.	critical	test	T14-07.04.00	A110210.020
EOC-5190	The EOC shall provide the capability to store spacecraft recorder housekeeping data as they are received from EDOS in CCSDS packets.	critical	analysis	T14-07.01.01	A110210.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
EOC-6010	The EOC shall provide the capability to perform analysis on data from the EOC history log.	critical	test	T14-08.01.00	A110320.030
EOC-6050	The EOC shall provide the capability to determine, for specified parameters over a specified time interval, at a minimum the following: a. Minimum value b. Maximum value c. Mean value d. Standard deviation of the parameter	critical	test	T14-08.05.01	A110320.030
EOC-6060	The EOC shall provide the capability to plot a specified parameter against another parameter or against time.	critical	test	T14-08.06.00	A110320.030
EOC-6195	The EOC shall provide the capability to detect, isolate, and report failures and anomalies at the spacecraft subsystem level, and the spacecraft level.	critical	test	T14-07.01.00	A110210.020
EOC-7010	The EOS Data Base spacecraft and instrument database, referred to as the Project Data Base (PDB) shall include at a minimum the following: a. Housekeeping data formats b. Housekeeping data parameter descriptions c. Command descriptions d. Syntactical rules for commands and operator directives e. Operator directives f. Display formats g. Planning and scheduling definitions and constraints i. Reportmission critical	critical	demo	T14-03.03.00	A110110.020 A110210.020 A110210.030 A110320.020 A110320.030 A110330.010
EOC-7015	The EOC shall receive from the ICCs instrument-specific portion of the PDB and/or any updates thereto.	critical	test	T14-03.03.00	A110110.020 A110210.020
EOC-7020	The EOC shall maintain the latest two versions of the PDB.	critical	demo	T14-03.03.00	A110110.020
EOC-7025	The EOC shall provide the capabilities to generate and modify the PDB.	critical	test	T14-03.03.00	A110110.020
EOC-7030	The EOC shall be capable of syntax and structure checking of the PDB.	critical	test	T14-03.03.00	A110110.020
EOC-7045	The EOC shall generate a report identifying any problems with the contents of the PDB.	critical	test	T14-03.03.00	A110110.020
EOC-7060	The EOC shall maintain a history log for the spacecraft and instruments for the most recent 7 days, including at a minimum the following: a. All messages sent and received b. Telemetry data c. Operator requests/directives d. Real-time commands g. Limits violations h. Error conditions i. Warnings j. Alarms n. Responses to operator requests p. EOC reconfiguration information	critical	test	T14-03.05.00	A110130.010
EOC-7120	The EOC shall be capable of extracting data sets from the history log by specifying time and data type to include as a minimum: telemetry, command, non-telemetry messages, operator directives, events, or limits violations.	critical	demo	T14-08.03.00	A110320.020 A110320.030 A110330.010
EOC-7130	The EOC shall be capable of maintaining a subset of history data in support of long term analysis.	essential	demo	T14-08.03.00	A110320.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
EOC-8010	The EOC shall have the capability to schedule its systems and communications interfaces that are used for instrument operations and for other activities, including maintenance, upgrade, sustaining engineering, testing, and training.	critical	demo	B14.00.00	A110120.010 A110130.010 A110210.010 A110220.010 A110320.010 A110330.010
EOC-8020	The EOC shall participate in the scheduling of interface and end-to-end tests with the external elements involved, including the ICCs.	critical	inspect	B14.00.00	A120410.010 A120410.020
EOC-8090	The EOC shall establish its configuration, including functional connectivity within the EOC and between the EOC and external interfaces, for multiple spacecraft and instrument operations, tests, and maintenance.	critical	test	B14.00.00	A110110.010 A110120.010 A110130.010 A110220.010
EOC-8100	The EOC shall perform prepass operational readiness tests on the EOC and between the EOC and external interfaces (via test messages).	critical	test	B14.00.00	A110210.010
EOC-8110	The EOC shall support reconfiguration to work around faults and anomalies without interrupting other ongoing operations.	critical	demo	B14.00.00	A110210.010
EOC-8130	The EOC shall allow operator override for reconfiguration requests that violate operational constraints.	critical	test	T14-02.03.00	A110110.010
EOC-8140	The EOC shall manage initialization and shutdown of EOC functions.	critical	test	T14-01.02.00	A120410.010 A120410.020 A110110.010 A110320.040
EOC-8150	The EOC shall provide the capability to analyze and report its internal performance at a minimum for the following: a. CPU utilization c. Equipment downtime d. Mass storage utilization e. Communication resource utilization f. Data accounting \\1419\\	essential	test	T14-02.03.00	A110320.040
EOC-8160	The EOC shall alert the operator when its status changes or when data errors exceed operator-specified levels.	critical	test	T14-01.02.00	A120410.010 A120410.020 A110110.030
EOC-8220	The EOC shall manage its faults including at a minimum the following: a. Fault identification and reporting b. Identification of recommended solutions c. Log of fault activities through resolution	critical	test	T14-02.01.02 T13-01.03.01 T13-01.03.02 T13-01.03.03	A120410.010 A120410.020 A110110.030
EOC-8230	The EOC shall analyze and report the configuration, status, accounting, and performance information received from EOC components.	fulfillment	test	T14-02.03.00	A120410.010 A110110.030
EOC-8240	The EOC shall be capable of initiating diagnostics to aid in isolating internal faults, using safeguards to prevent their operations from affecting other operations.	critical	test	T14-02.01.02 T13-01.03.05	A110110.030
EOC-8250	The EOC shall participate in the resolution of failures and anomalies involving the interfaces of the EOC.	critical	test	T14-02.02.00 T13-01.03.03	A110110.030
EOC-8260	The EOC shall provide tests for validating, verifying, and checking functional capabilities and performance for EOC functions after the EOC has been repaired or upgraded.	critical	test	T14-02.01.02	A110110.030 A110340.010
EOC-8270	The EOC shall provide standard test data sets to be used in the validation of EOC functions.	essential	inspect	T14-03.00.00 T14-06.00.00 T14-07.00.00 T14-08.00.00	A120410.010 A120410.020 A110110.030

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
EOC-8285	The EOC shall support instrument integration activities associated with the spacecraft prior to launch.	critical	demo	T14-04.00.00 T14-05.00.00 T14-06.00.00	A110120.030 A110120.040 A110120.050 A110120.060 A110210.010 A110210.020 A110210.030 A110210.040
EOC-8330	The EOC shall provide the capabilities: a. To test both nominal operations and failure paths b. To log test activities and test configuration c. To support analysis of test data and the generation of test results d. To maintain test procedures and test results	essential	inspect	B14.00.00	A120410.010 A120410.020 A110110.030
EOC-8370	The EOC shall generate at a minimum the following: a. Security audit log b. EOC resource utilization report c. EOC status report d. EOC hardware/software configuration history	essential	demo	T14-02.03.00	A110320.040
EOC-8375	The EOC status report shall include at a minimum the following: a. DAR statistics b. Compliance with the LTSP and LTIP c. Anomaly reports d. Maintenance report e. ICC status report information	essential	demo	T14-02.03.00	A110210.030 A110320.040
EOC-8380	The EOC shall provide the SMC with access to EOC reports, including at a minimum the following: a. Plans and schedules	essential	demo	T14-04.01.00 B15.01.00	A080180.000 A080180.090 A110320.030 A110330.010
EOC-9010	The EOC shall provide the capability for the operator to control the EOC functions and components, utilizing a combination of input devices.	critical	demo	T14-01.02.00	A110110.010
EOC-9020	The EOC shall provide the capability for the operator to send to displays, printers, and files spacecraft, instrument, and ground system information used or generated by each EOC function.	critical	demo	T14-01.02.00	A110110.010
EOC-9025	The EOC shall provide the capability to notify the operator of events and alarms.	critical	test	T14-01.02.00	A110110.010
EOC-9040	The EOC shall support the use of a high-level interactive control language, which consists of a set of directives and programming-like language capabilities, including at a minimum the following: a. Evaluate algebraic and logical expressions f. Initiate other EOC applications	critical	test	T14-01.03.00	A110120.060
EOC-9510	The EOC shall support the following simultaneous activities: a. Performing mission coordination, planning, scheduling, monitoring, and commanding of the U.S. spacecraft and instruments as listed in Table D-1.	critical	demo	B14.00.00 B15.01.00	A110120.030 A110120.040 A110120.050
EOC-9520	The EOC computer hardware shall be able to grow without redesign to twice the processing, storage, and communications capacities estimated for full system operation.	essential	analysis	B14.00.00	A120410.010 A110110.040
EOC-9580	The EOC architecture shall be capable of growing to support additional spacecraft without major redesign. \1324\	essential	analysis	B14.00.00	A120410.010 A110110.040
EOSD0010	ECS shall use and support the Space Network (SN), via the EDOS/Ecom interface, to obtain the forward and return link data communications needed to achieve full end-to-end ECS functionality.	essential	test	T14-02.02.00	A080180.000 A080180.030 A110210.010

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
EOSD0015	ECS shall use and support the Deep Space Network (DSN), the Ground Network (GN), and the Wallops Orbital Tracking Station (WOTS), via the EDOS/Ecom/Nascom interface, as backup of the SN, to obtain forward and return link data communications.	critical	test	T14-02.02.00	A080180.000 A080180.030 A110210.010
EOSD0020	ECS shall use and support the EDOS/Ecom interface to obtain the data capture, data archival, and data distribution services needed to achieve full end-to-end ECS functionality.	critical	test	B15.01.00	A120610.000 A080180.000 A120120.020 A120610.010 A120610.020 A080180.020 A080180.030 A110210.010
EOSD0025	ECS shall use Ecom for flight operations data transfers.	essential	test	T14-02.02.00	A120410.010 A120410.020 A110210.010
EOSD0030	ECS shall, during its lifetime, archive EOS and related non-EOS data and products.	essential	test	T12-02.26.00	A090310.000 A090320.000 A090420.000 A090430.000 A090310.050 A090320.100 A090310.100 A090420.050 A090320.050 A090430.050 A110210.010
EOSD0040	ECS shall provide users without prior approved accounts access to the system for descriptive information about ECS and the types of data it contains.	fulfillment	test	T11-01.01.02 B11.01.01 B11.01.02 T13-02.00.00	A100110.000 A100110.010 A120410.010

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
EOSD0500	ECS shall perform the following major functions: a. EOS Mission Planning and Scheduling b. EOS Mission Operations c. Command and Control d. Communications and Networking e. Data Input f. Data Processing g. Data Storage h. Data Distribution i. Information Management j. End-to-End Fault Management k. System Management	critical	test	B14.00.00 B15.00.00	A120110.000 A120120.000 A120210.000 A120220.000 A120230.000 A120240.000 A120310.000 A120410.000 A120510.000 A120520.000 A120110.010 A120110.020 A120110.030 A120120.010 A120120.020 A120120.030 A120210.010 A120210.020 A120220.010 A120220.020 A120220.030 A120610.030 A120610.040 A120250.010 A120250.020 A120610.060 A120240.010 A120310.020 A120510.010 A120510.030 A120540.010 A120540.020 A120510.020 A120540.000 A110120.010 A110120.030 A110120.040 A110120.050 A110120.060 A110210.020
EOSD0502	ECS shall provide an integrated set of toolkits consisting of software tools for each ECS element.	essential	demo	T10-02.01.04 T10-02.01.05 T10-02.02.00 T10-02.03.00 T11-01.05.00	A100210.000 A100220.000 A100210.010 A100210.030 A100220.010 A100220.030 A110120.030 A110130.010 A110320.040
EOSD0510	ECS shall be capable of being tested during all phases of its development and flight operations.	essential	test	B15.11.01	A120510.000 A120510.030
EOSD0540	ECS elements shall be expandable to facilitate updates in instrument data products and algorithms, particularly with respect to storage capacity and processing capability.	fulfillment	analysis	T10-02.01.02 T12-02.05.00 T12-02.08.00 T12-02.09.00	A080320.000 A080320.010 A110110.020
EOSD0545	ECS shall be able to accommodate growth (e.g., capacity) in all of its functions as well as the addition of new functions.	fulfillment	analysis	B15.11.01	A080320.000 A080320.010 A110110.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
EOSD0560	ECS benchmark tests and test data sets shall be defined for system verification and data quality evaluation.	essential	test	B10.00.00 B14.00.00 B15.00.00 B11.00.00 B12.02.01 B13.00.00	A120410.010 A120410.020 A110340.030
EOSD0630	ECS shall be capable of simultaneously supporting the Independent Verification and Validation (IV&V) activities and ECS development activities, both before and after flight operations begin.	essential	demo	B14.00.00 B15.11.01	A110340.010
EOSD0700	Each ECS element shall provide the following, to be used in the revalidation of its functional performance: a. Benchmark test(s) b. Standard test data sets.	essential	demo	B10.00.00 B14.00.00 B15.00.00 B11.00.00 B12.02.01 B13.00.00	A120610.000 A120620.000 A120610.010 A120610.020 A120620.010 A120620.020 A120620.030 A080520.080 A110340.010
EOSD0710	Each ECS element shall provide access to the following items used in the checkout and verification process: a. Stored test data sets b. Stored test plans c. Stored test procedures.	essential	demo	B10.00.00 B14.00.00 B15.00.00 B11.00.00 B12.00.00 B13.00.00	A080170.000 A110340.030
EOSD0720	Each ECS element shall be able to validate at any time during the life-time of the ECS that the ECS element primary functional performance is consistent with pre-defined operational benchmark tests.	critical	test	B10.00.00 B14.00.00 B15.00.00 B11.00.00 B12.00.00 B13.00.00	A120610.000 A120620.000 A120610.010 A120610.020 A120620.010 A120620.020 A120620.030 A110210.010 A110340.010
EOSD0730	Each ECS element shall be capable of verifying the fidelity of the ECS element interface to: a. Other ECS elements at any time during the lifetime of the ECS b. Entities external to ECS at any time during the lifetime of the ECS	critical	test	B14.00.00 B15.00.00 T11-01.00.00 T13-02.03.00	A120110.000 A120120.000 A080180.000 A120110.010 A120120.020 A080180.010 A080180.020 A080180.030 A080180.040 A080180.050 A080180.060 A080180.070 A080180.080 A080180.090 A110210.010 A110340.010
EOSD0740	Each ECS element shall provide a set of real or simulated functional capabilities for use in the following types of test: a. Subsystem (components of an ECS element) b. Element (fully integrated element) c. ECS System (Integration of ECS elements)	fulfillment	test	B10.00.00 B14.00.00 B15.00.00 B11.00.00 B12.00.00 B13.00.00	A110340.010

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
EOSD0750	Each ECS element shall provide a set of real or simulated functions which interfaces with both its ECS internal and external entities for use in the following types of test: a. Subsystem (components of an ECS element) b. Element (fully integrated element) c. EOSDIS System (Integration of EOSDIS elements)	fulfillment	demo	B14.00.00 T11-01.00.00 T13-02.03.00	A110340.010
EOSD0760	Each ECS element shall support end-to-end EOS system testing and fault isolation.	critical	demo	B14.00.00 B15.02.00 B15.03.00	A120110.000 A120120.000 A080610.000 A120110.010 A120110.020 A120110.030 A120120.010 A120120.020 A120120.030 A080610.010 A080610.030 A110340.010
EOSD0780	Each ECS element shall be capable of being monitored during testing.	fulfillment	demo	B10.00.00 B14.00.00 B15.02.00 B11.00.00 B12.00.00 B13.00.00	A110340.010

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
EOSD0800	Each ECS element shall be capable of supporting end-to-end test and verification activities of the EOS program including during the pre-launch, spacecraft verification, and instrument verification phases.	critical	demo	B15.01.00 B15.02.00 B13.00.00	A120110.000 A120120.000 A120210.000 A120220.000 A120230.000 A120240.000 A120310.000 A120410.000 A120510.000 A120520.000 A120610.000 A120620.000 A120630.000 A120110.010 A120110.020 A120110.030 A120120.010 A120120.020 A120120.030 A120210.010 A120210.020 A120210.030 A120220.010 A120220.020 A120220.030 A120610.030 A120610.040 A120250.010 A120250.020 A120610.060 A120230.030 A120610.010 A120240.010 A120620.010 A120310.020 A120620.020 A120620.030 A120630.010 A120630.020 A120420.010 A120510.010 A120510.030 A120540.010 A120540.020 A120510.020 A120540.000 A110340.010
EOSD1000	ECS elements shall contribute a loop delay of not greater than 2.5 seconds of the total system delay of five (5) seconds for emergency real-time commands, not including the time needed for command execution. The loop delay is measured from the originator to the spacecraft/instrument and back and only applies when a Tracking and Data Relay Satellite System (TDRSS) link is available for contactmission critical	critical	test	B14.00.00	A120620.000 A120620.020 A110210.030
EOSD1010	ECS shall support daily data volume, processing load, storage volume, instrument support, and data traffic as derivable from and specified in Appendix C and D.	critical	test	B15.02.00	A120620.000 A120620.010 A120620.020
EOSD1040	ECS shall provide sufficient capacity to permit the reprocessing of all EOS science data at twice the incoming data rate at a minimum, concurrently with processing of new data.	essential	analysis	B15.02.00	A120610.040 A120230.030 A120610.050

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
EOSD1050	ECS shall generate and make available to the users Level 1 Standard Products within 24 hours after the availability to ECS of all necessary input data sets.	fulfillment	analysis	B12.02.02 B12.03.00 B13.04.02	A120620.000 A120620.010
EOSD1060	ECS shall generate and make available to the users Level 2 Standard Products within 24 hours after the availability to ECS of all necessary Level 1 and other input data sets.	fulfillment	analysis	B12.02.02 B12.03.00 B13.04.02	A120620.000 A120620.010
EOSD1070	ECS shall generate and make available to the users Level 3 Standard Products within 24 hours after the availability to ECS of all necessary Level 2 and other input data sets.	fulfillment	analysis	B12.02.02 B12.03.00 B13.04.02	A120620.000 A120620.010
EOSD1080	ECS shall generate and make available to the users Level 4 Standard Products within one week after the availability to ECS of all necessary Level 3 and other input data sets.	fulfillment	analysis	B12.02.02 B12.03.00 B13.04.02	A120620.000 A120620.010
EOSD1140	ECS shall allocate 10% of development resources (the ECS Sustaining Engineering Facility at GSFC), including processing, storage, and networks, for the IV&V activity.	fulfillment	analysis	B15.11.00	A080410.000 A080410.040
EOSD1502	ECS elements shall use Ecom for data communications for the following types of data: a. Production data sets (Level 0 data) c. Real-time data (for health and safety) d. Command data e. Data requested from back-up archive f. TDRSS schedule requests g. Data exchange with the FDF	critical	demo	T14-04.01.00 T14-07.01.00 B15.01.00	A110210.010 A110210.020 A110210.030 A110210.040 A110220.010
EOSD1505	ECS elements shall receive EOS spacecraft predicted orbit data and post pass ephemeris determination data from the FDF.	critical	test	T14-04.01.00	A120410.020 A110120.020
EOSD1520	ECS elements shall receive TDRSS schedules from the Network Control Center (NCC).	critical	test	T14-04.05.00	A080180.000 A080180.030 A110120.050 A110220.030
EOSD1530	ECS elements shall submit TDRSS schedule requests to the NCC.	critical	test	T14-04.05.00	A080180.000 A080180.030 A110120.050 A110220.030
EOSD1600	The ECS elements that interface with EDOS elements shall exchange element level status data with EDOS.	essential	test	T14-02.02.02	A120620.000 A120620.020 A110210.020
EOSD1605	ECS elements shall receive from EDOS telemetry data, including housekeeping, engineering, ancillary, and science data from EOS instruments and spacecraft.	critical	test	T14-07.01.00	A110210.020
EOSD1607	ECS shall receive data from near term Earth Probe missions to include the following as a minimum: a). TRMM data for archive and distribution b). Landsat 7 data for distribution.	essential	test	B15.02.00 T15-01.01.01 T15-01.02.01 T15-01.03.01 T15-01.04.01 T15-01.05.01 T15-01.09.01 T15-02.05.01	A120310.000 A120310.020 A090410.020 A090410.040

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
EOSD1608	ECS elements shall receive from EPDSs the following at a minimum: a. Data products b. Ancillary data c. Calibration data d. Correlative data e. Metadata f. Data information g. Documentation	essential	test	T10-01.01.00 T10-01.04.00 T10-01.05.00 B15.06.00 T15-01.01.03 T15-01.01.04 T15-01.02.03 T15-01.02.04 T15-01.03.03 T15-01.03.04 T15-01.04.03 T15-01.04.04 T15-01.05.03 T15-01.05.04 T15-01.07.01 T15-01.07.02 T15-01.09.03 T15-01.09.04 T15-02.01.01 T15-02.01.02 T15-02.01.04 T15-02.01.05 T15-02.02.01 T15-02.02.02 T15-02.02.03 T15-02.02.05 T15-02.02.06 T15-02.03.01 T15-02.03.02 T15-02.03.03 T15-02.03.05 T15-02.03.06 T15-02.04.01 T15-02.04.02 T15-02.04.04 T15-02.04.05 T15-02.05.01 T15-02.06.01 T15-02.06.02 T15-02.07.01 T10-01.07.00	A120310.000 A120310.020
EOSD1680	ECS elements shall receive simulated spacecraft and instrument telemetry from the EOS spacecraft simulators and shall receive flight software loads from the Software and Validation Facility (SDVF)	essential	test	T14-07.01.00	A110210.020
EOSD1690	ECS elements shall provide commands to the EOS spacecraft simulators.	essential	test	T14-06.03.00	A110340.010
EOSD1695	The ECS shall provide 2-way interoperability with the V0 system.	fulfillment	test	T15-03.00.00	A100130.000 A080180.000 A100130.020 A100130.040 A080180.040
EOSD1703	ECS shall provide maintenance and operations interfaces to the DAACs to support the functions of:a). System Managementb). Science Algorithm Integrationsc). Product Generationd). Data Archive/Distributione). User Support Servicesf). System Maintenance	essential	demo	B15.02.00 B15.05.00	A080160.000 A080180.000 A080160.010
EOSD1705	ECS shall support interfaces to DAAC Unique components.	fulfillment	analysis	B15.02.00 B15.06.00	A120110.000 A120110.010 A120110.020 A120110.030

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
EOSD1710	ECS elements shall exchange with ADCs/ODCs, such as NOAA and other data processing and archiving facilities, information including the following: a. Directories b. Product Orders c. Order Status d. Science Data e. Management Data	fulfillment	demo	T15-04.01.00 T15-04.02.00 T15-04.07.00 T15-04.05.05 T15-04.06.05	A100140.000 A120510.000 A120520.000 A100140.020 A120510.030 A120540.010 A120540.020 A120540.000
EOSD1720	ECS elements shall receive from the ECS user community the following types of data requests at a minimum: b. Data Distribution Requests c. Reprocessing Requests	essential	demo	B13.02.01 B13.03.05	A100120.000 A100120.050 A100120.060 A100120.070 A090310.010 A090320.010
EOSD1730	ECS elements shall receive from the ECS user community Special Products, research results, and new derived data sets produced from EOS data.	fulfillment	demo	B14.00.00 B13.03.02	A100220.000
EOSD1740	ECS elements shall send the following types of data at a minimum to the ECS user community: a. Metadata b. Browse data c. Science data	essential	test	B15.10.00 B13.02.02	A100120.000 A100120.020 A120530.000 A120530.020
EOSD1750	ECS elements shall receive data including the following types of supporting information from the ECS science community (TLs, TMs, Pls, and Co-Is): a. Algorithms b. Software fixes c. Instrument calibration data d. Integration support requests e. Metadata for Special Products archiving f. Data transfer requests (inventories, directories, and browse) g. Data Quality/Instrument assessment h. Instrumemission essential	essential	demo	T14-04.02.00 B15.06.00	A090110.010 A090120.010 A090140.010 A120520.010 A120530.000 A120530.020
EOSD1760	The ECS elements shall send the following types of data at a minimum to the ECS science community (TLs, TMs, Pls, and Co-Is): a. Software Problem Reports b. Documentation c. Metadata (copies of inventories) d. Browse data e. Archived data f. Accounting information	essential	test	B15.10.00 T11-02.00.00 B13.02.02	A100210.000 A100220.000 A100210.010 A100210.030 A100220.010 A100220.030
EOSD1990	The ECS system and elements shall employ security measures and techniques for all applicable security disciplines which are identified in the preceding documents. These documents shall provide the basis for the ECS security policy.	essential	analysis	T10-05.01.00 B13.01.02	A080470.010 A080470.020
EOSD2100	The ECS technical security policy planning shall be comprehensive and shall cover at least the following areas: a. Applicability of the C2 Level of Trustedness as defined by the NSA b. Applicability of the C2 Object Reuse capability c. Discretionary control and monitoring of user access d. ECS communications, network access, control, and monitoring e. Computer system "virus" monitoring, detectionmission essential	essential	inspect	T10-05.01.00 T10-05.02.00 T10-05.04.01 T10-05.04.05 T10-05.04.07 T10-05.06.02 T10-05.06.04 B14.00.00	A080470.000 A080470.010 A080470.020
EOSD2200	Selection criteria meeting overall ECS security policies and system requirements shall be applied when selecting hardware.	essential	inspect	T10-05.00.00	A080470.000 A080470.010 A080470.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
EOSD2400	ECS shall provide multiple categories of data protection based on the sensitivity levels of ECS data, as defined in NHB 2410.9.	essential	test	T12-02.22.12	A080470.000 A080470.010 A080470.020
EOSD2430	Data base access and manipulation shall accommodate control of user access and update of security controlled data.	critical	test	T10-05.04.03 B11.05.00 B11.06.00	A110110.020 A110120.010 A110130.010 A110220.010
EOSD2440	Data base integrity including prevention of data loss and corruption shall be maintained.	critical	test	T12-02.19.00 T12-02.20.00 B12.02.06	A080620.030
EOSD2480	ECS elements shall require unique sessions when security controlled data are being manipulated.	essential	test	B12.01.00	A110210.010
EOSD2510	ECS elements shall maintain an audit trail of: a. All accesses to the element security controlled data b. Users/processes/elements requesting access to element security controlled data c. Data access/manipulation operations performed on security controlled data d. Date and time of access to security controlled data e. Unsuccessful access attempt to the element security controlled data by unauthorized mission critical	critical	demo	B11.07.00 T10-05.02.00 T10-05.04.07 T10-05.06.01 T10-05.06.02 B11.02.00 B11.05.00 B11.06.00 T13-01.01.04 T13-01.01.05 T13-01.06.01 T13-01.06.02 T13-01.08.06 T13-01.08.07 B13.01.02	A080620.000 A110320.040 A080620.030 A080620.040
EOSD2550	The ECS elements shall limit use of master passwords or use of a single password for large organizations requiring access to a mix of security controlled and non-sensitive data.	critical	test	T10-05.02.00	A080620.000 A110110.030 A080620.030 A080620.040
EOSD2620	ECS elements shall disconnect a user/element after a predetermined number of unsuccessful attempts to access data.	essential	test	T10-05.02.04	A110110.030
EOSD2640	ECS elements shall relinquish a connection between the element and a user when the user has not been active for a configurable period of time.	essential	test	T10-05.04.08 B10.02.00 T13-01.02.05	A110110.030
EOSD2650	ECS elements shall report detected security violations to the SMC.	essential	test	T13-01.02.08 T13-01.08.07 B13.01.02	A080620.000 A110110.030 A080620.030 A080620.040
EOSD2660	ECS elements shall at all times maintain and comply with the security directives issued by the SMC.	essential	demo	B15.04.04	A080470.020
EOSD2710	ECS elements shall report all detected computer viruses and actions taken to the SMC.	essential	demo	T10-05.06.00 B10.02.05	A080620.000 A080620.030 A080620.040
EOSD2990	The ECS elements shall support the recovery from a system failure due to a loss in the integrity of the ECS data or a catastrophic violation of the security system.	critical	demo	B15.12.00	A080150.000 A080150.010 A080150.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
EOSD3000	The ECS shall provide for security safeguards to cover unscheduled system shutdown (aborts) and subsequent restarts, as well as for scheduled system shutdown and operational startup.	critical	demo	B15.11.02	A080140.000 A080150.000 A080140.010 A080150.010 A080150.020 A080120.020 A080120.010 A080120.030 A080120.000 A080110.000 A080110.010 A080110.030 A080110.020 A080110.040
EOSD3200	A minimum of one backup which is maintained in a separate physical location (i.e., different building) shall be maintained for ECS software and key data items (including security audit trails and logs).	critical	inspect	T12-02.17.00 T12-02.18.00	A080130.000 A080140.000 A080150.000 A080140.020 A080150.020 A080170.010
EOSD3220	All media shall be handled and stored in protected areas with environmental and accounting procedures applied.	critical	inspect	T12-02.17.00 T12-02.18.00	A080130.000 A080140.000 A080150.000 A080140.020 A080150.020 A080170.010
EOSD3492	RMA data shall be maintained in a repository accessible for logistics analysis and other purposes.	fulfillment	inspect	T12-02.17.00 T12-02.18.00	A080510.000 A080510.030
EOSD3500	The ECS RMA Program shall adhere to GSFC 420-05-03, Performance Assurance Requirements for the EOSDIS.	essential	demo	B15.11.03	A080510.000 A080510.030
EOSD3510	Reliability predictions shall be calculated in accordance with the parts count analysis method, Appendix A, of MIL-HDBK-217F, Reliability Prediction of Electronic Equipment.	fulfillment	test	B15.11.04	A080510.000 A080510.030
EOSD3600	Maintainability shall be predicted in accordance with MIL-HDBK-472, Maintainability Prediction, Procedure IV.	fulfillment	test	B15.11.05	A080510.000 A080510.030
EOSD3610	The Maintainability Status Report shall be based on MIL-STD-470A, Maintainability Program for Systems and Equipment, Task 104 and shall include any changes in the MTBM predictions.	fulfillment	inspect	B15.11.05	A080640.000 A080640.020
EOSD3615	The Maintainability Status Report shall also include data on items specified for maintainability reporting in GSFC 420-05-03.	fulfillment	inspect	B15.11.05	A080640.000 A080640.020
EOSD3620	ECS shall predict and periodically assess maintainability by measuring the actual MDT and comparing to the required MDT.	fulfillment	test	B15.11.05 T13-01.04.02 T13-01.08.14	A080510.000 A080510.030
EOSD3625	For ECS functions with a backup capability, ECS shall use switchover time to the backup capability in measuring maintainability, rather than down time, when the component goes down.	fulfillment	test	B15.11.04	A080510.000 A080510.030
EOSD3630	The maximum down time shall not exceed twice the required MDT in 99 percent of failure occurrences.	essential	analysis	B15.11.04	A080510.000 A080510.030

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
EOSD3700	ECS functions shall have an operational availability of 0.96 at a minimum (.998 design goal) and an MDT of four (4) hours or less (1.5 hour design goal), unless otherwise specified. The above requirement covers equipment including: a. "Non-critical" equipment configured with the critical equipment supporting the functional capabilities in the requirements. b. Equipment providing other functionmission essential	essential	analysis	B15.11.03	A080510.000 A080510.030
EOSD3900	The SDPS function of receiving science data shall have an operational availability of 0.999 at a minimum (.99995 design goal) and an MDT of two (2) hours or less (8 minutes design goal).	critical	analysis	B15.11.03	A080510.000 A080510.030
EOSD3910	The switchover time from the primary science data receipt capability to a backup capability shall be 15 minutes or less (10 minutes design goal).	critical	test	B15.11.03	A080510.000 A080510.030
EOSD3920	The SDPS function of archiving and distributing data shall have an operational availability of 0.98 at a minimum (.999999 design goal) and an MDT of two (2) hours or less (9 minutes design goal).	essential	analysis	B15.11.03 B12.02.00	A080510.000 A080510.030
EOSD3930	The user interfaces to Information Management System (IMS) services at individual Distributed Active Archive Center (DAAC) sites shall have an operational availability of 0.993 at a minimum (.9997 design goal) and an MDT of two (2) hours or less (1.6 hour design goal).	essential	analysis	B11.09.01 B15.11.03	A080510.000 A080510.030
EOSD3940	The SDPS function of Information Searches on the ECS Directory shall have an operational availability of 0.993 at a minimum (.9997 design goal) and an MDT of two (2) hours or less (1.4 hour design goal).	essential	analysis	B11.09.02	A080510.000 A080510.030
EOSD3960	The SDPS function of Metadata Ingest and Update shall have an operational availability of 0.96 at a minimum (.999999 design goal) and an MDT of four (4) hours or less (6 minutes design goal).	essential	analysis	B12.01.00	A080510.000 A080510.030
EOSD3970	The SDPS function of Information Searches on Local Holdings shall have an operational availability of 0.96 at a minimum (.999999 design goal) and an MDT of four (4) hours or less (6 minutes design goal).	essential	analysis	B11.09.03	A080510.000 A080510.030
EOSD3980	The SDPS function of Local Data Order Submission shall have an operational availability of 0.96 at a minimum (.999999 design goal) and an MDT of four (4) hours or less (6 minutes design goal).	essential	analysis	B13.00.00	A080510.000 A080510.030
EOSD3990	The SDPS function of Data Order Submission Across DAACs shall have an operational availability of 0.96 at a minimum (.999999 design goal) and an MDT of four (4) hours or less (6 minutes design goal).	essential	analysis	B13.00.00	A080510.000 A080510.030
EOSD4000	The SDPS function of IMS Data Base Management and Maintenance Interface shall have an operational availability of 0.96 at a minimum (.999999 design goal) and an MDT of four (4) hours or less (6 minutes design goal).	essential	analysis	B13.00.00	A080510.000 A080510.030
EOSD4010	Each computer providing product generation shall have an operational availability of 0.95 at a minimum (.9995 design goal).	essential	analysis	T12-01.02.01 T12-01.02.03 T12-01.09.01 T12-01.09.03	A080510.000 A080510.030
EOSD4020	At each DAAC site, the product generation functional capabilities shall be spread across multiple product generation computers thereby providing a "failsoft" environment.	essential	inspect	B12.02.07	A120630.000 A120630.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
EOSD4030	The SMC function of gathering and disseminating system management information shall have an operational availability of .998 at a minimum (.999998 design goal) and an MDT of 20 minutes or less (5 minutes design goal), for critical services.	critical	analysis	B15.11.03	A080510.000 A080510.030
EOSD4035	The ESN shall have no single point of failure for functions associated with network databases and configuration data.	critical	test	T12-02.17.00 T12-02.18.00 T12-02.19.00 T12-02.20.00 B13.02.03 B13.03.04 B13.04.02	A080520.000 A080530.000 A080530.010
EOSD4036	The operational availability of individual ESN segments shall be consistent with the specified operational availability of the supported ECS functions.	critical	analysis	B14.00.00 B15.00.00 B11.00.00 B12.00.00 B13.00.00	A080530.000 A080530.010
EOSD4100	The ECS segments, elements, and components shall include the on-line (operational mode) and off-line (test mode) fault detection and isolation capabilities required to achieve the specified operational availability requirements.	essential	test	T13-01.03.02 B13.02.03 B13.03.04 B13.04.02	A080610.000 A120410.010 A080610.020
EOSD5000	ECS shall enable the addition of other data providers, e.g. DAACs, SCFs, ADCs, ODCs, which may:- provide heterogeneous services, i.e. services in support of EOS which may be less than or different than ECS services.- be connected with varying topologies- have variable levels of reliability or operational availability.	fulfillment	analysis	B15.02.00	A100140.000 A100210.000 A100220.000 A080310.000 A100140.010 A100140.020 A100140.030 A100140.040 A100210.040 A100220.040 A080310.010
EOSD5010	ECS shall enable extended provider support, i.e. client access of data and services at SCFs and DAACs, as authorized, without distinction to the client.	essential	test	T11-01.01.00 T11-01.04.00 T11-01.05.00 T11-03.06.00 T11-03.07.00 T11-03.08.00 B11.03.00	A080310.000 A080310.010
EOSD5020	ECS software, hardware, and interfaces shall enable transparent portability across heterogeneous site architectures, i.e. performing the same function at different ECS sites that may have different hardware implementations.	fulfillment	analysis	B15.02.00	A120630.000 A080310.000 A120630.020 A080310.010
EOSD5030	ECS shall enable the addition of information search and retrieval services, e.g. WAIS, WWW.	fulfillment	demo	T11-02.00.00	A100110.000 A080310.000 A100110.020 A080310.010
EOSD5040	ECS shall enable the combination of services from ECS and other data providers in arbitrary, i.e. non-predefined, ways as needed by users to conduct EOS science.	fulfillment	analysis	B13.00.00	A100210.000 A080310.000 A100210.010 A100210.020 A100210.030 A100210.040 A100220.010 A100220.020 A100220.030 A100220.040 A080310.010

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
EOSD5070	ECS shall enable expansion to GByte networks including the ability to provide increased volume of data distribution/access..	fulfillment	analysis	B15.11.01	A120630.000 A080310.000 A120630.010 A080310.010
EOSD5100	ECS shall enable evolution of ECS to be a federated unit within GCDIS, e.g. GCDIS data centers should not have to negotiate different interfaces with each DAAC.	fulfillment	analysis	B15.11.01	A120630.000 A080310.000 A120630.010 A080310.010
EOSD5110	ECS shall enable the separate use of data management, data processing, or data archive and distribution software components by a GCDIS data center. The GCDIS data centers will have full responsibility for integration of those components within their environment. Interfaces between the components must be developed to serve the mission of EOSDIS, but be made available for a GCDIS data center.	fulfillment	analysis	B15.02.00	A120630.000 A080310.000 A120630.010 A080310.020
EOSD5200	ECS shall enable the addition of the following as required for discipline specific user support: unique fields to metadata, unique products for browse, and unique documents for data products guides. These activities shall not require software changes to ECS.	fulfillment	analysis	T11-03.01.00 T11-03.03.01 T11-03.05.01 B11.06.00	A090110.000 A090120.000 A090130.000 A090310.000 A090320.000 A080310.000 A080310.020
EOSD5210	ECS shall enable development of a local user interface that accesses the core metadata and browse data base servers, bypassing the delivered "core" user interface. This server interface shall be configuration controlled and documented for the programmers' use.	fulfillment	analysis	B11.03.05 B13.02.00	A100120.000 A080310.000 A100120.090 A080310.020
EOSD5250	ECS shall enable access to configuration controlled applications programming interfaces that permit development of DAAC-unique value added services and products where DAAC-unique value added services may consist of one or more of the following types of developments: a. Visualization utilities and products b. Data sets and inter-data set usability utilities and products c. Data analysis utilitymission fulfillment	fulfillment	analysis	B15.02.00 T11-01.05.00	A100120.000 A080310.000 A100120.090 A080310.020
ESN-0003	The ESN shall enable researchers on existing networks (TCP/IP and GOSIP) to gain access to data and ECS services in a transparent manner to the underlying differences between the networks.	essential	analysis	B11.01.02 B11.01.03 B11.01.04 B13.01.01	A100110.000 A100110.010
ESN-0005	The ESN internal networks shall be dedicated networks linking ECS facilities for internal ECS operations (e.g., scheduling, product generation, QA validation).	critical	analysis	B15.02.00	A080490.000 A080490.090
ESN-0006	ESN shall interface with NSI to reach all external non - ECS network-attached facilities and science users.	essential	analysis	B15.02.00 T13-02.04.00 T13-02.05.00 T13-02.06.00 B13.01.01	A100110.000 A100110.010
ESN-0007	The ESN shall restrict the use of ECS inter-DAAC wide area networks for data transmission between ECS DAACs and other facilities that are directly attached to the ECS external network.	critical	test	B10.02.04	A080490.000 A080490.090

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
ESN-0010	ESN shall provide the following standard services: a. Data Transfer and Management Services b. Electronic Messaging Service c. Remote Terminal Service d. Process to Process Communication Service e. Directory and User Access Control Service f. Network Management Service g. Network Security and Access Control Service h. Internetwork Interface Services i. Bulletin Board Service	essential	test	T10-02.04.00 T10-04.03.00 T10-05.02.05 T10-05.02.06 T10-05.02.07 T10-05.02.08 T10-05.04.01 T10-05.04.07 B10.02.00 T13-01.02.00 B13.00.00	A080490.000 A080490.010 A080490.030 A080490.090 A080490.110 A080490.050
ESN-0070	The ESN shall support the elements data flow requirements identified in this specification.	critical	test	T10-02.04.00 T12-01.06.00 T12-01.07.00 T12-01.08.00 T12-01.09.00 B15.11.06 T12-01.10.00 T12-01.12.00	A080490.000 A080490.090 A080490.040
ESN-0080	The ESN shall provide internal communications interfaces to GFE circuits provided by PSCN which link to: a. Specified ADCs b. Selected SCFs c. Selected EPDSs (Landsat-7, TRMM) d. Selected ISTs	essential	test	T10-04.01.00 T10-04.02.00 T10-04.03.00 T10-04.04.00 B15.02.00	A120310.020
ESN-0180	The ESN shall connect with the International partners designated pickup points.	essential	test	T10-04.01.00 T10-04.02.00 T10-04.03.00 B10.01.01	A080490.000
ESN-0210	The ESN management function shall have a capability to obtain status on specific data flows to assure the successful operation of ESN.	critical	test	T13-01.02.01 T13-01.02.03	A080490.000 A080490.010 A080490.020
ESN-0240	The ESN shall be extensible in its design to provide capability for growth and enhancement.	essential	analysis	B10.00.00	A080490.000 A080490.140
ESN-0250	The ESN shall provide a help service to assist users with communication questions and problems.	essential	demo	B13.01.01	A080490.000 A080490.060
ESN-0280	The ESN shall provide file transfer and management service and as a minimum shall include the capability to transfer the following data types: a. Unstructured Text b. Binary Unstructured c. Binary Sequential d. Sequential Text	critical	test	T10-04.02.00 B10.01.01	A080170.000 A080180.000 A080170.030 A080180.010
ESN-0290	The file transfer and management service shall be available in interactive and non-interactive services.	critical	test	T10-04.02.00 B10.01.00	A080170.000 A080180.000 A080170.030 A080180.010
ESN-0300	The file transfer and management non-interactive services shall be able to be scheduled.	critical	test	T10-04.02.00 B10.01.00	A080170.000 A080170.030
ESN-0340	The ESN shall interoperate and exchange messages and data with external SMTP and X.400 mail systems.	essential	test	T10-04.02.00 B10.02.00	A080180.000 A080490.000 A080490.030 A080180.010

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
ESN-0370	The ESN shall provide interactive virtual terminal services.	essential	test	T10-04.01.00 T10-04.02.00 T10-04.03.00 T10-04.04.00	A100210.000 A100220.000 A100210.010 A100210.020 A100210.030 A100210.040 A100220.010 A100220.020 A100220.030 A100220.040
ESN-0450	The ESN shall provide process-to-process communication service.	critical	test	T10-04.02.00 T10-04.03.00	A080490.000 A080490.030
ESN-0490	The ESN shall provide a name-to-attribute mapping Directory Service at a minimum.	critical	test	T10-05.02.08	A080490.000 A080620.000 A080490.050 A080620.010
ESN-0510	The directory function shall be able to respond to requests for information concerning named objects, either physical or logical, so as to support communications with those objects.	critical	test	T10-05.02.08 B10.02.03	A080490.000 A080490.050
ESN-0590	The ESN Directory Service shall be protected by access control capabilities.	critical	test	T10-05.02.09	A080490.000 A080620.000 A080490.050 A080620.010
ESN-0600	The ESN Directory service shall include services and supporting mechanisms to authenticate the credentials of a user for the purpose of granting access rights and authorizing requested operations.	critical	test	T10-05.02.08	A080490.000 A080620.000 A080490.050 A080620.010
ESN-0610	The ESN shall include multiple Directory Service Agents (DSAs) which shall be collectively responsible for holding or retrieving all directory information which is needed by ECS.	critical	test	T10-05.02.08 T13-01.01.03 B13.00.00	A080490.000 A080620.000 A080490.050 A080620.010
ESN-0620	The ESN shall include a network management function to monitor and control the ESN.	critical	test	T13-01.03.03 B13.05.00	A080490.000 A080490.010
ESN-0640	The ESN shall include management functions at each ECS element, equipment or gateway within the ESN.	critical	test	T13-01.03.00 B13.05.00	A080490.000 A080490.010 A080490.020
ESN-0650	The ESN shall perform the following network management functions for each protocol stack implemented in any ECS element, and each communications facility: a. Network Configuration Management b. Network Fault Management c. Network Performance Management d. Network Security Management	critical	test	T10-05.01.00 T10-05.04.00 T13-01.02.00 T13-01.03.00 T13-01.04.00 T13-01.05.00 B13.05.00	A080490.000 A080490.010 A080490.020 A080490.110 A080520.060 A080490.070
ESN-0690	The ESN shall be capable of reconfiguration transparent to network users.	critical	test	B13.05.02	A080490.000 A080490.110
ESN-0740	The ESN network management service shall retrieve performance/fault data about ESN protocol stacks and equipment.	essential	test	T13-01.03.01 T13-01.03.02 T13-01.03.03 T13-01.04.01 B13.05.03	A080490.000 A080490.020 A080520.060
ESN-0750	The ESN shall provide statistical processing capabilities to allow extraction and tabulation of network performance data.	essential	test	T13-01.04.01 B13.05.03	A080490.000 A080490.020 A080520.060

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
ESN-0760	The ESN report generation function shall provide, on an interactive and scheduled basis, accounting, network configuration, fault and performance management information.	essential	test	T13-01.08.00 B13.05.03	A080490.000 A080610.000 A080530.000 A080490.090 A080520.070 A080530.010 A080610.020
ESN-0770	The ESN query capability shall generate ad hoc statistics and reports based on parameters entered.	essential	test	T13-01.08.00	A080490.000 A080490.080
ESN-0775	The ESN management service shall have the capability to redirect its reports to different devices such as console, disk or printer.	essential	test	T13-01.08.00 B13.05.03	A080490.000 A080490.020
ESN-0780	The network elements including the Internet interfaces, shall have the capability to report, periodically and on an interactive basis, network statistics to the ESN network management function, including the following information: a. Network round trip delay b. Network reset and restart indications c. Outages and CRC errors d. Performance statistics	essential	test	T13-01.07.00 T13-01.08.10 B13.05.03	A080490.000 A080490.070
ESN-0790	The ESN shall include the following configuration management functions at a minimum: a. collect information describing the state of the network subsystem and its communications resources, b. exercise control over the configuration, parameters, and resources of the subsystem, and over the information collected, c. store the configuration information collected, and d. display the configuration information	essential	test	T13-01.08.03 B13.05.03	A080490.000 A080490.010
ESN-0800	The ESN shall be capable of displaying the local network configuration status related to each system locally, and for all systems at the ESN network management facility.	essential	test	B15.02.00 B15.03.00 T13-01.02.06	A080490.000 A080490.010
ESN-0810	ESN shall provide the following fault management functions at a minimum: a. detect the occurrence of faults, b. control the collection of fault information, and c. diagnose the probable cause of a detected fault	essential	test	T13-01.03.00	A080490.000 A080490.070
ESN-0815	Network simulation and traffic modeling capability shall be provided to troubleshoot network problems and to use in network planning.	essential	analysis	T13-01.04.02 B13.05.03	A080490.000 A080490.070 A080490.140
ESN-0830	The ESN shall have the capability to detect and report communications related errors and events both locally and at the ESN network management facility.	critical	test	B10.02.00 T13-01.03.00 B13.05.01	A080490.000 A080490.070
ESN-0840	The ESN shall have error reporting, event logging and generation of alerts.	critical	test	T13-01.03.00	A080490.000 A080490.070
ESN-0900	Errors and events to be detected shall include at least: a. communications software version or configuration errors b. communications hardware errors c. protocol errors d. performance degradation conditions e. telecommunications errors and failures	critical	test	T13-01.03.00 B13.05.01	A080490.000 A080490.070

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
ESN-0910	The ESN fault management shall provide the capability to perform the following functions, at a minimum, both locally and at the ESN network management facility: a. set, view, and change alert threshold values b. enable and disable alert notifications (alarms) within a system c. enable and disable event reports within a system d. manage error and event logging files	essential	test	T13-01.03.00 B13.05.01	A080490.000 A080490.080
ESN-0920	The ESN shall provide a set of utilities to perform diagnostic and testing functions for purposes of fault isolation.	critical	inspect	T13-01.03.00	A080490.000 A080610.000 A080490.070 A080610.030
ESN-1000	The ESN network management function shall have the capability to build histories for different types of errors and events, and the capability to analyze errors and recommend corrective action wherever practical.	essential	test	T13-01.04.02	A080490.000 A080610.000 A080490.070 A080610.030
ESN-1010	The ESN shall provide, for selective use as a debugging aid, the capability to perform packet tracing of its supported protocols.	essential	test	T13-01.02.01 T13-01.02.02 T13-01.02.04 T13-01.02.03 B13.05.01	A080490.000 A080490.070
ESN-1030	The ESN shall perform periodic testing of alternate communication capabilities to verify that they are operational.	critical	demo	T10-04.01.00 B13.05.01	A080160.000 A080490.000 A080160.020 A080160.030 A080490.130
ESN-1060	The ESN performance management function shall provide the capability to evaluate the performance of ESN resources and interconnection activities.	essential	test	T13-01.04.01 B13.05.01	A120620.000 A080490.000 A120620.030 A080490.020
ESN-1065	The ESN performance management function shall include trend analysis for prediction of loading and bottlenecks/delays.	fulfillment	analysis	T13-01.04.02 B13.05.03	A120620.000 A120620.030
ESN-1070	The ESN shall provide the capability to perform the following functions, at a minimum: a. generate/collect network statistics b. control collection/generation of network statistics c. store system statistics and statistical histories d. display the system statistics e. track end-to-end transaction performance	essential	test	T13-01.04.00	A080490.000 A080490.020
ESN-1090	The ESN shall provide the capability to control the communications performance parameters of the network.	essential	test	T13-01.07.00	A080490.000 A080530.000 A080490.020 A080530.010
ESN-1140	The ESN shall provide protocol translation, termination, bridging and routing.	critical	test	T10-04.00.00	A080170.000 A080490.000 A080490.090
ESN-1170	The ESN shall provide necessary translation within supported file transfer and e-mail services.	critical	test	T10-04.02.00 T10-04.03.00	A080170.000
ESN-1180	The ESN shall interoperate with NSI to provide user access to ECS.	critical	test	T10-04.03.00 T11-01.01.00 T11-01.04.00 T11-01.05.00 T13-02.00.00 B13.00.00 B10.02.06	A080170.000 A080490.000 A080490.090
ESN-1181	The ESN shall provide an ECS Bulletin Board capability.	essential	demo	T10-04.03.00	A080490.000 A080490.030
ESN-1206	The ESN capacity and performance shall be consistent with the specified capacity and performance requirements of the ECS functions.	critical	test	B15.11.03	A120620.000 A120620.030

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
ESN-1207	The ESN capacity and performance shall be capable of expansion to be consistent with the specified capacity and performance growth requirements of the ECS elements and functions.	critical	analysis	B15.11.01 B15.11.03	A120630.000 A120630.010
ESN-1330	The ESN shall provide ISO/OSI data communications protocols and services specified in the GOSIP (see Figure 8-3) to external interfaces as required by the IRDs.	essential	analysis	T10-04.01.00 T10-04.03.00 T10-04.04.00 B10.02.00	A120110.000 A080180.000 A120110.010 A120110.020 A120110.030 A080180.010
ESN-1340	The ESN shall provide support for TCP/IP communications protocols and services to external interfaces as required by the IRDs.	critical	analysis	T10-04.01.00 T10-04.03.00 T10-04.04.00 B10.01.00	A100140.000 A100210.000 A100220.000 A120510.000 A080180.000 A100140.010 A100140.020 A100140.030 A100140.040 A100210.010 A100210.020 A100210.030 A120510.030 A100210.040 A100220.010 A100220.020 A100220.030 A100220.040 A080180.010
ESN-1350	The ESN LANs shall provide physical devices and the corresponding medium access control (MAC) protocol compatible with ISO and ANSI standards.	critical	analysis	T10-04.02.00 T10-04.03.00 T10-04.04.00	A080490.000 A080490.090 A080490.110
ESN-1360	The ESN shall control access of processes and users through an authentication and authorization service that meets GNMP standards.	critical	test	B11.07.00 T10-05.01.00	A080490.000 A080620.000 A080490.090 A080490.110 A080620.030 A080620.040
ESN-1380	The ESN shall provide countermeasures for the following security threats related to data communications: a. modification of data (i.e., manipulation) while in transit over the network b. disclosure of authentication information c. degradation in network or processing resource performance through denial of service attack d. Impersonation of authentication credentials or authorization privileges.	critical	test	T10-05.02.00 T10-05.04.01 T10-05.05.01 B10.02.00	A080490.000 A080620.000 A080490.110 A080620.030 A080620.040
ESN-1400	The following security functions and services, at a minimum, shall be provided: a. authentication b. access (authorization) control c. data integrity d. data confidentiality	critical	test	B11.07.00 T10-05.01.00 T10-05.02.00 T10-05.04.01 T10-05.05.01 B12.01.00	A080490.000 A080620.000 A080490.110 A080620.030 A080620.040
ESN-1430	The ESN shall provide the following security event functions: a. Event detection b. Event reporting c. Event logging	critical	test	T13-01.01.04 T13-01.02.08 T13-01.08.07 B13.05.01	A080490.000 A080620.000 A080490.110 A080620.030 A080620.040

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
FOS-0025	The FOS shall provide a test mode of operation that does not interfere with ongoing operations, and which supports independent element and subsystem tests, end-to-end tests, and integration and verification activities occurring during at a minimum: a. Spacecraft and instrument integration and test b. Pre-launch c. Upgrades and enhancements	critical	demo	B14.00.00	A120410.010 A110340.020
FOS-0030	The FOS shall adopt an extensible general-purpose scheduling interface for communicating planning and scheduling information between FOS elements.	critical	demo	T14-04.00.00	A110120.010 A110120.020 A110120.030 A110120.050 A110120.060
ICC-0020	The ICC shall be capable of interfacing with one or more local and/or remote ISTs for the instrument supported by the ICC.	critical	test	T14-01.04.00	A120410.020 A110130.010 A110310.010 A110330.010
ICC-0030	The ICC shall have the capability to notify the TL or instrument PI at the IST of, at a minimum, the following: b. Arrival of instrument engineering data	critical	test	T14-01.04.00	A110330.010
ICC-0050	An ICC shall have the capability to interface with other ICCs both electronically and by voice to facilitate, at a minimum, the following: a. Planning of coordinated operations c. Exchange of instrument status	essential	demo	T14-01.04.00	A110120.010
ICC-0055	The ICC shall interface with EDOS for coordinating EDOS-provided services (e.g., data delivery service messages, status).	critical	test	B14.00.00	A110120.010
ICC-2010	The ICC shall have the capability to access the EOC planning and scheduling information.	critical	test	T14-04.01.00	A110120.020 A110120.030 A110120.040 A110210.040
ICC-2020	Upon request from the PI/TL at the IST, the ICC shall provide the IST with planning and scheduling information, which includes, at a minimum, the following: b. Current resource availability information d. Plans and schedules	essential	demo	T14-04.01.00	A110130.010
ICC-2060	The ICC shall reintroduce applicable requested activities in its planning and scheduling function when the activity did not occur due to a deviation from the schedule.	critical	test	T14-04.07.00	A110120.040 A110220.020
ICC-2115	The ICC shall have the capability to plan and schedule instrument maintenance activities.	critical	test	T14-04.01.00	A110310.010
ICC-2140	At least once each week, the ICC shall build an instrument resource profile or an instrument resource deviation list (when a baseline resource profile exists for the instrument), which includes a description of instrument operations currently planned for the target week.	critical	test	T14-04.02.00	A110120.040 A110220.020
ICC-2150	The ICC shall accept from the EOC a notification of rejection of its instrument activities proposed in the instrument resource profile or instrument resource deviation list.	critical	test	T14-04.02.00	A110120.040 A110220.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
ICC-2190	The ICC shall build or update its instrument resource profile, or when a resource profile exists, its instrument resource deviation list, based, at a minimum, on the following: b. Instrument support activities d. Current resource availability f. Rejection notification from the EOC of activities that can not be accommodated in the preliminary resource schedule g. Existing preliminary resource mission cr	critical	test	T14-04.02.00	A110120.030 A110120.040 A110220.020
ICC-2220	The ICC shall be able to generate the instrument resource profile in both machine usable and human readable forms.	critical	demo	T14-04.02.00	A110120.060 A110220.040
ICC-2230	When generated, the ICC shall provide the EOC with its instrument resource profile or, when a resource profile exists, an instrument resource deviation list.	critical	demo	T14-04.02.00	A110120.060 A110220.040
ICC-2250	The ICC shall accept the preliminary resource schedule from the EOC.	critical	test	T14-04.06.00	A110120.060 A110220.040
ICC-2270	For each day the ICC shall be capable of generating or updating, an instrument activity list or an instrument activity deviation list (when an activity profile exists for the instrument) nominally covering the next 7 days.	critical	test	T14-04.02.00	A110120.040 A110120.060 A110220.020 A110220.040
ICC-2280	The ICC shall generate or update the instrument activity list, or when a baseline activity profile exists, the instrument activity deviation list, based, at a minimum, on the following: b. Instrument support activities d. Preliminary resource schedule e. Current resource availability information h. Rejection notification from the EOC of the activities that cannot be accommodated in the demission critical	critical	test	T14-04.02.00	A110120.060 A110130.010 A110220.040
ICC-2290	The ICC shall generate the instrument activity list or the instrument activity deviation list (when an activity profile exists for the instrument) in both machine-usable and human-readable forms, to describe for each activity, at a minimum, as many of the following that apply: a. Activity identifier including traceability to DARs and/or instrument support activities b. Objectives c. Resomission critical	critical	test	T14-04.02.00	A110120.040 A110130.010
ICC-2300	The ICC shall accept from the EOC a notification of rejection of instrument activities.	critical	test	T14-04.07.00	A110120.040 A110120.060 A110130.010
ICC-2390	The ICC shall provide the EOC with the instrument activity list or instrument activity deviation list (when an activity profile exists for the instrument) and any updates thereto, when generated.	critical	test	T14-04.02.00	A110120.040 A110220.040
ICC-2420	The ICC shall send to the IST the generated instrument activity list (or instrument activity deviation list) to be reviewed and/or approved by the PI/TL.	essential	test	T14-04.02.00	A110120.060 A110130.010
ICC-2430	The ICC shall notify the PI/TL at the IST of any problems encountered while building or updating its instrument activity list (or instrument activity deviation list).	essential	test	T14-04.02.00	A110120.060 A110130.010
ICC-2450	The ICC shall accept from the IST notification of problem resolution regarding the instrument activity list (or the instrument activity deviation list).	essential	test	T14-04.02.00	A110120.060 A110130.010
ICC-3010	The ICC shall validate instrument loads, SCC-stored instrument commands, and/or SCC-stored instrument tables, as appropriate, that are generated at the ICC.	critical	test	T14-05.04.00	A110120.060 A110210.030
ICC-3020	The ICC shall accept the detailed activity schedule or its updates from the EOC.	critical	test	T14-04.07.00	A110120.060

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
ICC-3040	The ICC shall be capable of generating, at least once each day, instrument loads, SCC-stored instrument commands, and/or SCC-stored instrument tables based on the detailed activity schedule.	critical	test	T14-05.04.00	A110120.060
ICC-3150	The ICC shall be able to accept from the PI/TL, via the IST, instrument memory loads, including software and table updates.	essential	test	T14-05.04.00	A110120.040 A110130.010
ICC-3160	Upon request from the PI/TL at the IST, the ICC shall provide the IST with at a minimum the following: a. Current detailed activity schedule b. Instrument commands/tables and instrument loads c. Instrument command status information	essential	test	T14-04.07.00 T14-05.04.00 T14-06.03.00	A110120.040 A110130.010
ICC-3210	The ICC shall provide the EOC with instrument loads, SCC-stored instrument commands, SCC-stored instrument tables, preplanned real-time instrument commands, and associated information that includes, at a minimum, the following: a. Instrument identifier b. Schedule identifier, if applicable c. Critical command information	critical	inspect	T14-05.04.00	A110120.060
ICC-3220	The ICC shall have the capability to accept, via the IST, an instrument command request from the PI/TL.	essential	test	T14-05.04.22	A110210.040
ICC-3240	The ICC shall generate and validate a preplanned instrument command in response to an instrument command request from the PI/TL at the IST.	essential	test	T14-05.03.00	A110120.060
ICC-3370	The ICC shall provide the capability to verify the successful receipt of instrument commands.	critical	demo	T14-05.03.00	A110120.060
ICC-3380	The ICC shall accept from the EOC instrument uplink status, which includes at a minimum the following: a. Receipt at the EOC b. Validation status as determined by the EOC	essential	test	T14-06.05.00	A110210.030 A110210.040
ICC-3400	Upon request from the PI/TL at the IST, the ICC shall provide the IST with instrument command status, which includes at a minimum the following: a. Receipt at the EOC b. Validation status as determined by the EOC	essential	test	T14-06.05.00	A110210.030 A110210.040
ICC-3420	The ICC shall provide the IST with command request status, which includes the receipt of the command request at the ICC and the status of for the corresponding instrument command groups.	essential	test	B14.00.00	A110210.030 A110210.040
ICC-4010	Upon request from the PI/TL, the ICC shall provide the IST with at a minimum the following: a. Instrument housekeeping and engineering data b. Spacecraft housekeeping data	essential	test	T14-07.01.00	A110210.020 A110330.010
ICC-4020	The ICC shall provide the capability to accept CCSDS packets from EDOS containing at a minimum the following data types: a. Spacecraft and instrument housekeeping data b. Instrument engineering data or instrument science data within which instrument engineering data is embedded c. Instrument memory dump data	critical	test	T14-07.01.00	A110210.020
ICC-4045	The ICC shall provide the capability to extract instrument housekeeping data and relevant spacecraft parameters from the spacecraft and instrument housekeeping data stream.	critical	test	T14-07.03.00	A110210.020
ICC-4050	The ICC shall be capable of extracting instrument engineering data from instrument science data.	critical	test	T14-07.03.00	A110210.020
ICC-4060	The ICC shall support all EOS telemetry formats for instrument engineering data.	critical	test	T14-07.09.00	A110210.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
ICC-4070	The ICC shall provide the capability to receive and report data quality information with the incoming CCSDS packets as provided by EDOS.	critical	test	T14-07.09.00	A120410.010 A110210.020
ICC-4090	The ICC shall provide the capability to detect and report gaps in the telemetry data it receives.	critical	test	T14-07.09.00	A110210.020
ICC-4095	The ICC shall provide the capability to receive and process, non-telemetry data, which includes at a minimum the following: a. Monitor blocks from the DSN, GN, and WOTS b. Status messages from EDOS	critical	test	T14-07.09.00	A120410.010 A110210.020
ICC-4100	The ICC shall have the capability to perform instrument housekeeping and engineering data processing, which include: a. Decommuration b. Engineering unit conversion c. Limit checking, flagging out-of-limit parameters e. Digital and discrete state determination	critical	test	T14-07.09.00	A110210.020
ICC-4110	The ICC shall support the definition of sets of boundary limits for each non-discrete parameter, with each set including definitions for one or more upper and lower boundaries.	critical	test	T14-07.09.03	A110210.020
ICC-4130	The ICC shall have the capability to continuously process instrument housekeeping and engineering data in real time as it is being received.	critical	test	T14-07.09.01	A110210.020
ICC-4150	The ICC shall have the capability to provide event messages whenever a predetermined number of limit violations for a parameter is detected.	critical	test	T14-07.09.04	A110210.020
ICC-4190	The ICC shall provide the capability to store spacecraft recorder telemetry data as it is being received.	essential	test	T14-07.09.00	A110210.020
ICC-4200	The ICC shall provide the capability to process stored telemetry data at a rate.	essential	test	T14-08.01.00	A110210.020
ICC-4210	The ICC shall be capable of extracting instrument engineering data from instrument science data. at science data rates up to 1.544 Mbps.	essential	test	B14.00.00	A110210.020
ICC-4220	The ICC shall be capable of receiving and processing real-time housekeeping and engineering data at rates up to 50 kbps.	essential	test	B15.00.00 B15.11.03	A110210.020
ICC-4230	The ICC shall be capable of receiving and recording spacecraft recorder data at rates up to 1.544 Mbps.	essential	test	B15.00.00 B15.11.03	A110210.020
ICC-4410	The ICC shall provide the capability to perform analysis on data from the ICC history log.	critical	test	T14-08.03.00	A110320.020
ICC-4420	The ICC shall receive spacecraft status data from the EOC.	critical	test	T14-07.01.00	A110210.020
ICC-4440	The ICC shall provide the capability to determine, for specified parameters over a specified time interval, at a minimum the following: a. Minimum value b. Maximum value c. Mean value d. Standard deviation of the parameter e. Time and duration of limit violations	critical	test	T14-08.05.00	A110210.020
ICC-4450	The ICC shall provide the capability to plot specified parameters against other specified parameters or against time.	critical	test	T14-08.05.00	A110320.030
ICC-4460	The ICC shall provide the capability to time-correlate related instrument parameters.	critical	test	T14-08.05.00	A110320.030
ICC-4480	The ICC shall have the capability to monitor and evaluate instrument environmental parameters.	critical	test	T14-08.05.00	A110320.030
ICC-4520	The ICC shall provide instrument status data to the EOC, periodically or upon detection of anomalies.	critical	test	T14-08.05.00	A110210.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
ICC-4540	The ICC shall monitor the configuration of the instrument.	critical	demo	T14-07.09.00	A110210.020
ICC-4545	The ICC shall have the capability to recommend instrument reconfigurations.	critical	test	T14-08.05.00	A110210.020
ICC-4550	The ICC shall have the capability to compare and display selected instrument telemetry parameter values with the expected values based on, at a minimum the following: c. Instrument-specific telemetry information in the IDB	critical	test	T14-07.09.00	A110210.020
ICC-4600	The ICC shall accept from the IST at a minimum the following: a. Instrument anomaly notifications and instructions	essential	demo	T14-07.09.00	A110210.020
ICC-4710	The ICC Instrument Data Base (IDB) shall include at a minimum the following: a. Instrument housekeeping data formats b. Instrument engineering data formats c. Housekeeping and engineering parameter descriptions d. Command descriptions e. Syntactical rules for commands and operator directives f. Operator directives g. Display formats h. Planning and scheduling definitions j. Report formats m. Paramission critical	critical	inspect	T14-03.01.00	A110110.020
ICC-4720	The ICC shall maintain the latest two versions of the IDB.	critical	test	T14-03.03.01	A110110.020
ICC-4730	The ICC shall have the capability to modify records in the IDB.	critical	test	T14-03.02.02	A110110.020
ICC-4740	The ICC shall provide syntax and structure checking of the IDB.	critical	test	T14-03.01.01	A110110.020
ICC-4750	The ICC shall provide accounting information on the contents of the IDB.	essential	inspect	T14-03.01.01	A110110.020
ICC-4760	The ICC shall generate a report identifying any problems with the contents of the IDB.	critical	test	T14-03.01.01	A110110.020
ICC-4765	The ICC shall provide the PI/TL at the IST access to any data in the IDB.	essential	demo	T14-03.02.02	A110110.020
ICC-4775	The ICC shall provide the EOC with the instrument-specific portion of the PDB and/or updates thereto.	critical	demo	T14-03.01.01	A110210.020 A110320.040
ICC-4780	The ICC shall maintain a history log of instrument and ICC activities for at least 7 days, including at a minimum the following: a. All messages sent and received b. Engineering and housekeeping data c. Operator requests/directives and responses d. Commands f. Limits violations g. Error conditions k. Instrument calibration parameters	critical	test	T14-03.05.00	A110110.020
ICC-4790	The ICC shall be capable of extracting data sets from the history log by specifying time and data type.	critical	test	T14-08.03.05	A110110.020 A110320.030 A110330.010
ICC-6005	The ICC shall have the capability to schedule its systems and communications interfaces that are used for its instrument operations and for other activities including maintenance, upgrade, sustaining engineering, testing, and training.	critical	demo	B14.00.00	A110120.010 A110210.010 A110220.010
ICC-6010	The ICC shall participate in the scheduling of interface and end-to-end tests with the external elements involved including the EOC, the SMC for other EOS elements, and EDOS for MO&DSD data delivery systems.	critical	demo	B14.00.00	A110120.010 A110210.010 A110220.010

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
ICC-6020	The ICC shall establish its configuration, including functional connectivity within the ICC and between the ICC and external interfaces, for its instrument operations, tests, and maintenance.	critical	demo	B14.00.00	A110120.010 A110210.010 A110220.010
ICC-6030	The ICC shall perform prepass operational readiness tests on the ICC and between the ICC and external interfaces (via test messages).	critical	demo	B14.00.00	A110210.010 A110340.010 A110340.030
ICC-6040	The ICC shall support reconfiguration to work around ICC faults and anomalies without interrupting other ongoing operations.	critical	test	B14.00.00	A110110.030
ICC-6060	The ICC shall allow operator override for ICC reconfiguration requests that violate operational constraints.	critical	test	B14.00.00	A110110.030
ICC-6070	The ICC shall manage initialization and shutdown of ICC functions.	critical	test	B14.00.00	A110110.010 A110120.010 A110210.010 A110320.010
ICC-6080	The ICC shall provide the capability to analyze and report its internal performance at a minimum for the following: a. CPU utilization c. Equipment downtime d. Mass storage utilization e. Communication resource utilization	essential	test	B14.00.00	A110320.040
ICC-6090	The ICC shall alert the operator when its status changes or when data errors exceed operator-specified levels.	critical	demo	B14.00.00	A110110.010 A110110.030
ICC-6110	The ICC shall manage its faults, including at a minimum the following: a. Fault identification	critical	test	B14.00.00 B15.03.00 T13-01.03.03	A110110.030
ICC-6120	The ICC shall analyze and report the configuration, status, accounting, and performance information received from ICC components.	essential	test	T14-02.01.01	A110110.030 A110320.040
ICC-6130	The ICC shall be capable of initiating diagnostics to aid in isolating internal faults, using safeguards to prevent their operations from affecting other operations.	critical	test	T14-02.01.01 B15.03.00 T13-01.03.04	A110110.030
ICC-6135	The ICC shall participate in the resolution of failures and anomalies involving the interfaces of the ICC.	critical	test	T14-02.01.01 B15.03.00	A110110.030
ICC-6140	The ICC shall provide tests for validating, verifying, and checking functional capabilities and performance for ICC functions after the ICC has been repaired or upgraded.	critical	demo	B14.00.00	A110110.030 A110340.010
ICC-6145	The ICC shall provide standard test data sets to be used in the validation of the ICC functions.	essential	inspect	T14-02.01.00	A110110.030 A110340.010
ICC-6195	The ICC shall provide the capabilities: a. To test both nominal operations and failure paths b. To log test activities and configuration c. To support analysis of test data and the generation of test results d. To maintain test procedures and test results	essential	demo	B14.00.00	A110110.030 A110340.010
ICC-6200	The ICC shall provide capabilities to generate at a minimum the following: a. Security audit log b. ICC resource utilization report c. ICC status report d. ICC hardware/software configuration history	essential	demo	B14.00.00	A110320.040
ICC-6205	The ICC status report shall include at a minimum the following: b. Compliance with LTIP c. Anomaly reports d. Maintenance reports	essential	demo	B14.00.00	A110320.040
ICC-6210	The ICC shall provide the SMC and the EOC with access to ICC reports.	essential	demo	T14-04.01.00	A110320.040

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
ICC-6510	The ICC shall provide the capability for the operator to control the ICC functions and components, utilizing a combination of input devices.	critical	inspect	T14-01.05.00	A110120.010
ICC-6520	The ICC shall provide the capability for the operator to send to displays, printers, and files spacecraft, instrument, and ground system information used or generated by each ICC function.	critical	inspect	T14-01.05.00	A110120.010
ICC-6525	The ICC shall provide the capability to notify the operator of events and alarms.	critical	test	T14-01.05.00	A110110.030
ICC-6540	The ICC shall support the use of a high-level interactive control language, which consists of a set of directives and programming-like language capabilities, including at a minimum the following: a. Evaluate algebraic and logical expressions f. Initiate other ICC applications	critical	test	T14-01.05.00	A110120.030
ICC-7010	The IST shall have the capability to accept from the ICC and display, in parallel with any current activities in the IST, a notification regarding at a minimum the following: b. Arrival of instrument engineering data d. Instrument anomalies found during instrument monitoring	essential	test	B14.00.00	A110210.040 A110330.010
ICC-7030	The IST shall have the capability to accept the requested data from the ICC in parallel with any current activities in the IST.	essential	test	B14.00.00	A110210.040 A110330.010
ICC-7060	The IST shall have the capability to accept data from the Science Computing Facility (SCF), which include at a minimum the following data: a. Microprocessor memory loads	essential	test	T14-05.04.00	A110310.010
ICC-7070	The IST shall have the capability to provide data to the SCF, which include at a minimum the following data: a. Microprocessor memory dumps	essential	test	T14-08.05.00	A110330.010
ICC-7220	The IST shall have the capability to request and accept from the ICC planning and scheduling information, which includes, at a minimum, the following: d. Plans and schedules	essential	test	T14-04.01.00	A110130.010 A110310.010
ICC-7230	The IST shall have the capability to access planning and scheduling functions.	essential	demo	T14-04.01.00	A110130.010
ICC-7290	The IST shall have the capability to request and accept from the ICC at a minimum the following: a. Current detailed activity schedule b. Instrument commands and memory loads	essential	demo	T14-04.07.00 T14-05.04.00	A110130.010 A110310.010
ICC-7430	The IST shall have the capability to request and accept from the ICC at a minimum the following: a. Real time instrument housekeeping and engineering data b. Real time spacecraft housekeeping data	essential	test	T14-07.09.00	A110130.010 A110310.010
ICC-7460	The IST shall provide the capability to display and process the raw or engineering unit converted instrument engineering data.	essential	test	T14-07.09.00	A110130.010 A110310.010
IMS-0020	The IMS shall always be accessible to users and an informational status message describing the current availability status of ECS services and the predicted time for resumption of services which are temporarily unavailable shall be provided.	essential	demo	T10-04.01.04	A100110.000 A080170.000 A080150.000 A100110.010 A080150.030
IMS-0030	The IMS shall provide from each ECS access node, access to the full range of services spanning the whole of ECS, including data and services available from all DAACs without requiring that the user know the physical location of the data.	essential	demo	T11-03.07.00	A080490.000 A080490.050

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
IMS-0040	The IMS shall verify user authorization by validation of inputs with information as supplied by the SMC.	critical	test	T10-05.04.00 B13.01.01	A100110.000 A080170.000 A100110.010
IMS-0050	The IMS shall provide the capability for users to define and modify user profile information, to include at a minimum: a. User electronic address b. Data distribution media c. Data distribution address d. User expertise level e. Default query parameters f. Terminal characteristics g. Technical specialty.	essential	test	T10-05.02.08 T11-01.01.00 B13.01.01	A100110.000 A080170.000 A100110.050
IMS-0060	The IMS shall, when creating ECS user accounts, request registration approval, user account priorities, and authorized user services from the SMC.	critical	test	T11-01.01.00	A100110.000 A080170.000 A100110.040
IMS-0070	The IMS shall provide the user with initial system access procedures, priority information, and authorized services as maintained in the SMC.	essential	demo	T11-01.01.00	A100110.000 A080170.000 A100110.010
IMS-0080	The IMS shall maintain a list of authorized ECS services for each user and shall update the list with information supplied by the SMC.	essential	inspect	T10-05.04.00 T11-01.01.00	A100110.000 A080170.000 A100110.040
IMS-0085	The IMS shall provide unregistered users access to ECS services as authorized by the SMC.	essential	inspect	T13-02.03.00	A100110.000 A080170.000 A100110.040
IMS-0090	The IMS shall be accessible to users via, at a minimum: a. Direct connection c. Network link	essential	inspect	T10-04.01.00	A100110.000 A080170.000 A080180.000 A080490.000 A100110.010 A100110.020 A100110.030 A080170.030 A080490.100 A080180.040
IMS-0100	The IMS shall support, at a minimum: a. Interactive sessions b. Non-interactive remote sessions c. Client-server interface	essential	inspect	T10-04.01.00 B13.01.01	A100110.000 A120110.000 A080170.000 A120110.010 A120110.020 A120110.030 A100110.010 A100110.020 A100110.030 A080170.030
IMS-0110	The IMS user interface shall support access from dumb terminals, both local and remote, as well as bitmap display workstations that do not support the IMS toolkit.	essential	inspect	T10-04.01.00	A100110.000 A080490.000 A100110.010 A100110.020 A100110.030 A080490.090

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
IMS-0120	The IMS shall provide, dependent upon the user's display device capabilities, a user-friendly interface with the following features at a minimum: a. Multiple window display b. Buttons and pull down menus c. Valid lists for all variables d. An information base of associations between variables (e.g., between instruments and geophysical parameters) f. Context-sensitive help g. Minimal and consismission essential	essential	inspect	B15.02.00 T11-01.03.02 T13-02.03.00 T13-02.07.00 B13.01.01	A100110.000 A080490.000 A080150.000 A100110.050 A080150.020 A080490.090
IMS-0130	The IMS shall verify that a user is authorized to access a particular IMS service before providing the service to the user.	critical	demo	T10-05.04.02 T10-05.04.03 T13-02.03.00 B13.01.02	A100110.000 A100110.010
IMS-0140	The IMS shall provide the capability for multiple simultaneous sessions _ for example, the capability to transition back and forth smoothly between directory search, inventory search, and data visualization. For example, when viewing a directory entry, the user shall have easy access to the corresponding guide (documentation/reference material) and inventory information.	fulfillment	demo	T11-03.08.00 B13.00.00	A100120.000 A100120.030
IMS-0150	The IMS shall supply a uniform user interface for access to the following at a minimum: a. Heterogeneous data sets b. Communications networks c. Data bases that are geographically dispersed d. Multi-disciplined directories and inventories	fulfillment	demo	B15.02.00 T11-02.00.00 T11-03.00.00 B11.04.00	A100120.000 A100120.020 A090420.080
IMS-0160	The IMS shall provide levels of user interaction support to include at a minimum: a. Expert (e.g., quick command driven direct information input) b. Intermediate (e.g., some prompting and automatically supplied help)	fulfillment	demo	T13-02.01.00 T13-02.03.00	A100110.000 A100120.000 A100110.010 A100110.020 A100110.030 A100110.060 A100120.020
IMS-0170	The IMS user interface shall be designed so that restructuring of the IMS data bases shall not result in the need for changes to the IMS interface.	fulfillment	analysis	T11-03.01.00 T11-03.03.00 T11-03.05.00	A100120.000 A100120.110
IMS-0180	The IMS shall extract relevant data from the user profile information and display as default values.	fulfillment	demo	T11-01.01.00 T13-02.03.00	A100110.000 A100110.050
IMS-0190	The IMS shall provide the capability to save information selected in prior metadata searches for use in subsequent IMS service requests, either in the current session or in future sessions.	essential	demo	T11-02.05.00 T11-02.06.00 T11-02.07.00	A100120.000 A100120.020
IMS-0210	The IMS shall allow data access privileges to be configurable by user and data type for: a. Read b. Write c. Update d. Delete e. Any combination of the above	critical	demo	T10-05.01.00 T10-05.04.00	A100120.000 A100120.010
IMS-0220	The IMS shall store, maintain and provide data management services for ECS directory, inventory, and guide (documentation/reference material) and other IMS data bases.	essential	demo	T12-02.01.00 T12-02.03.00 T12-02.04.00 T12-02.05.00 T12-02.07.00 T12-02.08.00	A080160.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
IMS-0230	The IMS shall restrict update of ECS directory, inventory, and guide (documentation/reference material) and other IMS data bases to authorized users based on the users access privileges.	critical	demo	T12-02.01.00 T12-02.03.00 T12-02.04.00 T12-02.05.00 T12-02.07.00 T12-02.08.00	A080620.000 A080620.030 A080620.040
IMS-0240	The IMS shall provide, at a minimum, data base administration utilities for: a. Modifying the data base schema b. Performance monitoring c. Performance tuning d. Administration of user access control e. On-line incremental backup f. On-line recovery g. Export/import of data	critical	demo	T10-05.01.00 T10-05.04.00 T12-02.00.00 T11-03.01.00 T11-03.02.00 T11-03.03.00 T11-03.05.00 T13-01.04.01	A100120.000 A100120.110
IMS-0250	The IMS shall provide required maintenance of the IMS data bases, to include at a minimum: a. Capability to restructure the data base b. Capability to interrupt a maintenance session and restart the session without loss of information	essential	demo	T12-02.01.00 T12-02.03.00 T12-02.04.00 T12-02.05.00 T12-02.07.00 T12-02.08.00 T11-03.01.00 T11-03.03.00	A100120.000 A080160.000 A080160.020 A080160.030 A100120.110
IMS-0260	The IMS shall provide interactive and batch information management capabilities for authorized users to add, update, delete, and retrieve information from the IMS data bases.	essential	demo	T12-02.01.00 T12-02.03.00 T12-02.04.00 T12-02.05.00 T12-02.07.00 T12-02.08.00 T11-03.01.00 T11-03.03.00	A080160.020
IMS-0290	IMS internal data base management queries shall be expressed in a standard query language.	fulfillment	analysis	T11-03.04.00 T11-03.06.00 T12-02.27.00	A080490.090
IMS-0300	The IMS shall maintain a log of all information update activity.	essential	inspect	T12-02.00.00 B15.02.00 B15.03.00 T11-03.01.00 T11-03.03.00	A090310.000 A090320.000 A090420.000 A090430.000 A090310.080 A090310.130 A090320.080 A090320.130 A090420.080 A090430.080

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
IMS-0320	Standard Product related metadata shall contain, at a minimum: a. Keywords and glossary from investigators b. Keywords, synonyms, and glossary for cross-product and cross-directory referencing c. Identifiers for locating products in the DADS archive by granule d. Documentation on algorithms, including version history, authors, written description of product, equations, and references e. Documentation on instrument(s) and spacecraft(s) including history of housekeeping and ancillary parameters, discipline characterization, calibration parameters, key individuals, and references f. Identifiers, algorithms, written descriptions, equations, authors, and references associated with static browse products and subsetted, subsampled, and summary data products g. Published papers, research results, significant results, and references by author and date h. Key organizations and personnel for all product-related DAACs, ADCs, and ODCs i. Granule-specific information as listed in Tables C-10 and C-11 in Appendix C	essential	inspection	T10-01.04.00 T10-02.01.01 T12-02.01.00 T12-02.03.00 T12-02.04.00 T12-02.05.00 T12-02.06.00 T12-02.07.00 T12-02.08.00 B15.08.00 T11-02.05.00 T11-02.06.00 T11-02.07.00 T11-03.04.00 T11-03.06.00 T15-01.01.04 T15-01.02.04 T15-01.03.04 T15-01.04.04 T15-01.05.04 T15-01.09.04	A100120.000 A090210.000 A090220.000 A090230.000 A090250.000 A100120.020 A090230.070 A090240.070 A090260.070 A090210.070 A090210.150 A090260.000 A090270.070
IMS-0330	The metadata maintained by the IMS shall provide a cross reference that relates science data to the following at a minimum: a. Calibration data, navigation data, and instrument engineering data b. Processing algorithms used for data generation at the PGS c. Software used for data generation at the PGS d. Parameters used for data generation at the PGS e. Input data used for data generation at the mission essential	essential	demo	T10-02.01.01 B15.08.02 T12-02.09.00	A100120.000 A090210.000 A090220.000 A090230.000 A090250.000 A100120.020 A090230.070 A090240.070 A090260.070 A090210.070 A090210.150 A090260.000 A090270.070
IMS-0340	The metadata maintained by the IMS shall contain content-based summary information, including statistical summaries and granule features, for all ECS standard and special products.	essential	inspect	T12-02.09.00	A100120.000 A090210.000 A090220.000 A090230.000 A090250.000 A100120.020 A090230.070 A090240.070 A090260.070 A090210.070 A090210.150 A090260.000 A090270.070
IMS-0350	The IMS shall provide the capability for authorized personnel to add, delete, or modify ECS metadata entries, individually or in groups.	critical	inspect	T12-02.05.00 T12-02.06.00 T12-02.07.00 T12-02.08.00 T11-03.01.00	A090310.000 A090320.000 A090420.000 A090430.000
IMS-0360	The IMS shall maintain or provide access to an on-line Earth Science master directory of information, which may be geographically distributed, that describes whole data sets in the Earth science disciplines.	essential	demo	T12-02.05.00	A100110.000 A100110.060

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
IMS-0415	The IMS shall provide the ability to access and present (dependent on the user's display device capabilities) guide information which includes graphics and hypertext, derivable from suitably structured documents, as well as plain text documents.	essential	demo	T11-02.02.00 T11-03.08.02 B13.02.02	A100110.000 A100110.070
IMS-0420	The IMS on-line guide (documentation /reference material) shall provide or, where appropriate, contain references to such information as: a. Documentation of processing algorithms used for EOS and other Earth science data products generated by the ECS b. Results of science data quality assessments of EOS data c. Bibliography of published and unpublished literature (as available) derived from tmission essential	essential	demo	T12-02.01.00 T12-02.02.00 T12-02.03.00 T12-02.04.00 T11-02.02.00	A100110.000 A100110.070
IMS-0430	The IMS shall maintain an on-line inventory with information that individually describes each granule of EOSDIS data, where granule refers to the minimum traceable logical unit of data stored in the archives, as defined by the instrument science team.	essential	analysis	T12-02.07.00 T12-02.08.00 T11-02.03.00 T11-02.04.00	A100110.000 A080170.000 A100110.080
IMS-0450	The IMS shall accept and validate new and updated metadata for all ECS archive data which has been ingested at the DADS.	essential	test	T12-02.09.00	A080170.000
IMS-0455	The IMS shall accept and validate new metadata from the DADS reflecting changes as a result of: b. Transfers c. Unexpected loss d. Restoration of data after recovery from loss	essential	test	T15-01.01.06 T15-01.02.06 T15-01.03.06 T15-01.04.06 T15-01.05.06 T15-01.09.06 T15-02.01.05 T15-02.02.06 T15-02.03.06 T15-02.04.05	A080170.000 A120120.020
IMS-0460	The IMS shall provide the capability to accept metadata problem reports from users, and inform the PGS quality assurance staff of the problem.	fulfillment	demo	B15.06.02 T13-02.08.01	A080170.000 A120120.020
IMS-0480	The IMS shall allow the user to store documents in the ECS.	essential	demo	T12-02.01.00 T12-02.02.00	A090210.000 A090220.000 A090230.000 A090250.000 A090230.080 A090240.080 A090260.080 A090210.080 A090260.000 A090270.080
IMS-0490	The IMS shall provide the capability to ingest documentation in a number of digital text formats, at a minimum the following: a. ASCII text b. Microsoft WORD c. HTML d. Interleaf e. Postscript f. WordPerfect	essential	demo	T12-02.01.00 T12-02.02.00	A090210.000 A090220.000 A090230.000 A090250.000 A090230.030 A090240.030 A090260.030 A090210.030 A090210.110 A090260.000 A090270.030

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
IMS-0500	The IMS shall provide access to information to include at a minimum: a. Metadata b. Spacecraft housekeeping and ancillary data information f. Processing schedules g. Documentation i. Science Processing Library software j. Documentation on data format and metadata standards	essential	demo	B15.02.00 B15.10.00 T11-02.02.02 T11-02.05.00 T11-02.06.00 T11-02.07.00 T11-03.04.00 T11-03.05.00 T11-03.08.00	A100120.000 A100120.020
IMS-0510	The IMS shall provide tools for research planning and data search, to include at a minimum: a. Data acquisition schedules and plans b. The capability to map specified geophysical parameters to the appropriate instrument and/or Standard Product c. Descriptive information on instruments and geophysical parameters available in Standard Products d. Climatology information f. Geographic reference aidsmission critical	critical	demo	T12-01.01.00 T12-01.06.00 T12-01.08.00 T11-02.01.00 T11-02.02.00 T11-02.04.00 T11-02.07.00 T11-02.12.00 T11-02.13.00 T11-02.14.00 T11-02.15.00 T12-01.12.00 T11-03.07.00 B13.02.02	A100120.000 A100120.020
IMS-0530	The IMS shall provide document text search.	essential	demo	T11-02.02.00	A100110.000 A100110.060
IMS-0535	The IMS shall support hierarchical searching of suitably structured documents.	fulfillment	demo	T11-02.02.00	A100110.000 A100110.060
IMS-0540	The IMS shall display PGS system processing schedules to users.	fulfillment	demo	T12-01.01.01 T12-01.12.00	A100120.000 A100120.050
IMS-0545	The IMS shall provide the capability to search a products processing history.	fulfillment	demo	B13.02.02	A100120.000 A100120.040
IMS-0550	The IMS shall allow a user to locate and identify desired data without detailed knowledge of the ECSs: a. Architecture b. Data Base management system c. Data Base structure d. Query languages e. Data formats	fulfillment	demo	T11-03.08.00	A100120.000 A100120.020
IMS-0570	The IMS shall provide an incremental search capability.	fulfillment	demo	T11-02.11.00	A100120.000 A100120.020
IMS-0580	The IMS shall provide geographic and geophysical (e.g. ocean bathymetry surface features) overlays to aid in the selection of spatial data and to enhance the display of metadata.	fulfillment	demo	T11-02.05.00	A100120.000 A100120.020
IMS-0590	The IMS shall provide the capability to distribute information: a. On-line (i.e., over a network) b. Off-line (hardcopy or offline data media).	essential	demo	T12-02.22.00 T12-02.23.00	A100120.000 A100120.080
IMS-0600	The IMS shall provide the capability to search a directory of information that describes whole EOSDIS, non-EOSDIS, and ADC earth science data sets.	essential	demo	T11-02.01.00 T11-03.08.01	A100110.000 A100140.000 A120520.000 A100110.060 A100140.020 A120540.010 A120540.020 A120540.000
IMS-0610	The IMS shall provide the capability to search the data inventory which describes each granule of EOSDIS data.	essential	demo	T11-02.01.00	A100110.000 A100110.080

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
IMS-0620	The IMS shall provide access to inventories of selected ODCs and ADCs via level II and level III catalog interoperability as specified in ICDs.	essential	demo	B15.13.00 T11-03.08.03	A100140.000 A120520.000 A100140.010 A100140.020 A100140.030 A100140.040 A120540.010 A120540.000
IMS-0625	The IMS shall provide bi-directional interoperability between ECS and V0 for access to the inventory metadata, guide information, and browse products via level III catalog interoperability as specified in ICDs.	fulfillment	demo	T15-03.07.00 T15-03.08.00 T15-03.09.00	A100130.000 A100130.020 A100130.040
IMS-0630	The IMS shall provide the capability to select metadata for retrieval by: a. Boolean operators b. Relational operators c. Attribute values d. Search strings e. Combinations thereof	essential	test	T11-02.04.00 T11-02.07.00 T11-02.08.00 T11-02.09.00 T11-02.10.00 T11-02.12.00 T11-02.13.00 T11-02.14.00 T11-02.15.00	A100120.000 A100120.020
IMS-0640	The IMS shall provide the capability to query geographic metadata by any of the following criteria at a minimum: a. Geographic reference b. Data element content (as specified in metadata) c. Minimum bounding rectangle d. Point and radius f. Geographic name (based on a standard data base, such as USGS Geographic Names Information System)	essential	test	T11-02.05.00 T11-02.06.00 T11-02.07.00	A100120.000 A100120.020
IMS-0650	The IMS shall query non-geographic metadata by any of the following criteria at a minimum: a. Exact word match b. Phrase match c. Character set (string) d. Wildcard construct (prefix, embedded, suffix) e. Character range f. Logical and Boolean operators g. Min/max range search h. Any combination of the above	essential	test	T11-02.04.00 T11-02.07.00 T11-02.08.00 T11-02.09.00 T11-02.10.00 T11-02.11.00 T11-02.12.00 T11-02.13.00 T11-02.14.00 T11-02.15.00	A100120.000 A100120.020
IMS-0660	The IMS shall provide inventory metadata search based on any combination of the core (Table C-10, Appendix C) and where applicable dataset-specific (Table C-11, Appendix C) inventory metadata attributes and geophysical parameters at a minimum.	essential	test	T11-02.04.00 T11-02.06.00 T11-02.07.00	A100120.000 A100120.020
IMS-0665	The IMS shall provide informational messages to indicate that a query is being executed, and shall provide the capability for the user to abort any time-intensive operations.	essential	demo	T11-02.00.00 B13.02.03	A100120.000 A100120.020
IMS-0670	The IMS shall provide the capability to accept, validate, and fill orders from users for periodic delivery of information stored at the IMS.	fulfillment	demo	T11-03.06.01 B13.02.02 B13.04.02	A100120.000 A100120.050 A100120.060
IMS-0680	The IMS shall provide data order capabilities integrated with metadata search capabilities.	essential	demo	B13.02.00	A100120.000 A100120.050
IMS-0690	The IMS shall provide the capability to visualize pre-order data products and metadata (e.g. coverage maps, summary data) to facilitate the data selection and ordering process.	essential	demo	T11-02.00.00	A100110.000 A100110.090

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
IMS-0740	The IMS shall provide the capability for users to generate and update requests for one-time orders or standing orders for the DADS to distribute DADS archive holdings to include, at a minimum, Standard Products, Standard Product software, spacecraft housekeeping and ancillary data.	essential	demo	T12-02.22.11 T12-02.27.00 B13.04.02	A100120.000 A100120.050 A100120.060
IMS-0750	The IMS shall provide the capability for the user to order Standard Product software and associated documentation in accordance with EOSDIS distribution criteria.	fulfillment	demo	T11-03.06.01 B13.04.02	A100120.000 A100120.050 A100120.060
IMS-0760	The IMS shall access distribution criteria for each data product and data product software and compare the distribution criteria to the requester's data access rights to verify that the data and software can be distributed as requested.	essential	test	T13-02.05.00 T13-02.06.00	A100120.000 A100120.010
IMS-0770	The IMS shall allow users to formulate a data order based on any combination of the inventory core metadata attributes and geophysical parameters at a minimum.	essential	test	T13-02.05.00 B13.04.02	A100120.000 A100120.050 A100120.060
IMS-0780	The IMS shall accept and validate from the ECS users, IPs, ADCs, and ODCs requests for ECS archival data products.	essential	test	B15.10.00 T13-02.05.00 T13-02.06.00	A120540.000
IMS-0790	The IMS shall determine the location of requested data products and submit the product order to the data center where the data are archived.	essential	test	T11-03.06.01	A100120.000 A100120.050 A100120.060
IMS-0800	The IMS shall determine the amount of data expected to be returned as the result of the product order and provide the information to the requester.	fulfillment	demo	T11-03.06.01	A100110.000 A100120.000 A100120.010 A100110.100
IMS-0810	The IMS shall prepare, for output to the DADS, product orders to retrieve specified data from the archive and distribute it, which contains the following information at a minimum: a. Requester identification b. Data type c. Data set identifier e. Data formats f. Distribution instructions, including media requirements g. Request priority h. Suggested earliest start time i. Suggested latest complemission e	essential	test	B15.10.00 T13-02.06.00	A100120.000 A100120.060
IMS-0820	The IMS shall provide to the user product order status information from the DADS to confirm or reject an order, which contains the following information at a minimum: a. Requester identification b. Request identification c. Request status d. If rejection, then the reason for the rejection	essential	test	B15.10.00 T13-02.06.00	A100120.000 A100120.060
IMS-0840	The IMS shall provide the capability to receive data order status from the DADS when the ordered data has been shipped to the user.	essential	demo	T12-02.27.00 B13.04.02	A100120.000 A100120.050 A100120.060

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
IMS-0860	The IMS shall provide an interface to ADC and ODC data systems and archives that produce, process, and/or maintain Earth science data sets and that have agreed to make the information and services available to ECS.	essential	demo	T15-04.04.00 T15-04.05.00 T15-04.06.00	A100140.000 A120520.000 A080180.000 A100140.010 A100140.020 A100140.030 A100140.040 A120540.010 A120540.020 A120540.000 A080180.040
IMS-0870	The IMS shall provide access in accordance with MOUs to ADC and ODC data that b. Is stored by ADC and ODC archives and requested by EOSDIS users c. Is required as ancillary data for production processing	essential	test	B15.13.00 T11-03.06.01	A100140.000 A120520.000 A080180.000 A100140.010 A100140.020 A100140.030 A100140.040 A120540.010 A120540.020 A120540.000 A080180.040
IMS-0880	The IMS shall provide an interface to the ADC and ODC archives for ordering data to be delivered directly to the user or to a DADS.	essential	test	T11-03.06.01 B13.04.02	A100140.000 A080180.000 A100140.020 A080180.040
IMS-0890	The IMS shall provide the capability to receive the metadata from the DADS when ADC or ODC data has been ingested into the ECS archives.	essential	test	T10-01.04.00 B15.06.00	A100140.000 A080180.000 A100140.020 A080180.040
IMS-0900	The IMS shall provide an interface to the IPs for ordering data to be delivered directly to the user or to a DADS.	essential	test	B15.10.00 T11-03.06.01	A100120.000
IMS-0910	The IMS shall provide the capability to receive the metadata from the DADS, when IP data has been ingested into the EOSDIS archives.	essential	test	T10-01.04.00 B15.06.00	A100120.000
IMS-0915	The IMS shall provide an interface to the Version 0 system for ordering data products to be delivered directly to the user, or as specified in ICDs.	essential	test	T15-03.08.04 T15-03.09.04	A100130.000 A100130.020
IMS-0930	The IMS shall provide the capability to search metadata holdings for the purpose of identifying the product desired and the input data to be processed.	essential	test	T11-02.00.00 B13.02.02	A100120.000 A100120.020
IMS-0970	The IMS shall determine if requested data products already exist and can be retrieved.	essential	test	T12-02.22.03 B12.02.05	A100120.000 A100120.050
IMS-0980	The IMS shall determine the necessary processing required to generate a requested product.	essential	test	T10-03.02.02 T12-01.06.00 T12-01.08.00 B12.02.02 B12.03.00	A100120.000 A100120.050
IMS-0990	The IMS shall determine if necessary lower level products exist for processing of the requested data product.	essential	test	T12-01.06.00 T12-01.08.00 B12.02.02 B12.03.00	A100120.000 A100120.050
IMS-1000	The IMS shall prepare, for output to the PGS, the Product Processing Order for specifying processing and data to be used in generating a product, which shall contain the following information at a minimum: a. Identification of the product(s) to be generated b. Identification of the expected time/time window of receipt of input products, and ancillary data c. Product processing priority d. Destimission essential	essential	test	T12-01.06.00 T12-01.08.00 B12.02.02 B12.03.00	A100120.000 A100120.050

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
IMS-1005	The IMS shall forward, to the appropriate DADS, Product Orders for distribution of the products generated as a result of the Product Processing Order.	essential	test	B15.02.00 B15.10.00 T12-02.22.00 T12-02.25.00	A100120.000 A100120.050
IMS-1030	The IMS shall accept from the SMC and provide to the requester, conflict resolution, which shall contain the following information at a minimum: a. Request identification b. Data type c. Priority modifications e. Information on when request will be serviced f. SMC contact point	essential	test	T12-01.08.00 B13.03.00	A080220.000 A080220.010 A080220.020 A080220.030
IMS-1040	The IMS shall, using information provided by the PGS, notify users when processing will not be completed within the estimated time, and provide the reason for the delay and modified arrival times.	essential	test	T12-01.08.00 B13.03.00	A100120.000 A100120.050 A100120.060
IMS-1060	The IMS shall maintain a cross reference of processing performed, data sets produced, supporting data used, and data recipient.	essential	test	B15.02.00 B13.03.00	A100120.000 A100120.050
IMS-1080	The IMS shall accept requests for acquisition of data to be processed one time or as standing orders.	critical	demo	T12-01.01.00 T12-01.04.00 T12-01.05.00 T12-01.06.00 T12-01.07.00 T12-01.08.00 T12-01.09.00 T12-01.10.00	A080210.010
IMS-1265	The IMS shall provide the capability to forward data acquisition requests to the Landsat-7 Ground Segment, in accordance with applicable IRDs and ICDs.	critical	test	B15.02.00	A100140.030
IMS-1270	The IMS shall determine the ECS elements responsible for processing and distributing, and the input data required for processing using the product thread information provided by the SMC.	essential	test	T12-01.01.00 T12-01.04.00 B13.03.00 B13.04.00	A080180.000 A080180.090
IMS-1280	The IMS shall send a product order, priority, and suggested start time and completion time to the ECS elements responsible for processing and distributing a product.	essential	test	T12-01.11.00 B13.04.00	A100120.000 A100120.050
IMS-1290	The IMS shall send a product order to an ADC or an ODC with the identification of the destination DADS and suggested shipping deadline for data required for product processing.	essential	test	T12-01.11.00 B13.04.00	A100140.000 A120520.000 A100140.020 A120540.010 A120540.020 A120540.000
IMS-1300	The IMS shall be capable of responding to user inquiries for status of user-initiated requests, and user request history.	fulfillment	demo	T13-02.06.00 B13.04.00	A100110.000 A100120.000 A100120.010 A100110.100
IMS-1310	The IMS shall provide the capability to accept, from product requesters, product distribution status requests, retrieve the request status, and display the status to the requester for an ECS, ADC, or ODC data product.	essential	test	B15.02.00 T13-02.06.00	A100120.000 A100140.000 A120520.000 A100120.050 A100140.030 A120540.010 A120540.000
IMS-1320	The IMS shall provide the capability to accept, from data acquisition requesters, data acquisition status requests, retrieve the request status, and display the status to the requester.	essential	test	B15.02.00 T13-02.06.00	A100140.030

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
IMS-1330	The IMS shall provide the capability to accept, from data processing requesters, data processing status requests, retrieve the request status, and display the status to the requester.	essential	test	B15.02.00 T13-02.06.00	A100120.000 A100120.050
IMS-1380	The IMS shall provide the capability to integrate the element toolkits with a common user interface.	fulfillment	test	B11.08.01 T11-01.05.00	A080320.000 A080320.010
IMS-1400	The Virtual IMS Information Management software shall operate with a local data base using an ECS supported DBMS provided by the SCF, thereby facilitating the process of importation of the local data base into the ECS.	essential	demo	T11-03.01.00 T11-03.03.00 T11-03.05.00	A100210.000 A100220.000 A100210.040 A100220.040
IMS-1410	The Virtual IMS Information Management software shall provide metadata management services for local SCF metadata.	essential	demo	T12-02.09.00 T11-03.01.00 T11-03.03.00 T11-03.05.00 T11-03.08.00	A100210.000 A100220.000 A100210.040 A100220.040
IMS-1420	The Virtual IMS Information Management software shall provide the capabilities to search the local SCF data base.	essential	demo	T11-02.00.00	A100210.000 A100220.000 A100210.040 A100220.040
IMS-1430	The Virtual IMS Information Management software shall provide local interactive and batch data management capabilities to: a. Add b. Update c. Delete d. Retrieve	essential	demo	T12-02.03.00 T12-02.04.00 T12-02.05.00 T12-02.07.00 T12-02.08.00 T12-02.09.00 B12.02.03	A100210.000 A100220.000 A100210.040 A100220.040
IMS-1440	The Virtual IMS Information Management software shall provide local SCF data base administration utilities for, at a minimum: a. Modifying the data base schema b. Performance monitoring c. Administration of user access control d. Data base backup e. Data base recovery	essential	demo	T10-05.01.00 T11-03.01.00 T11-03.03.00 T11-03.05.00 T12-02.17.00 T12-02.18.00 T12-02.19.00 T12-02.20.00 B12.02.03	A100210.000 A100220.000 A100210.040 A100220.040
IMS-1450	The Virtual IMS Information Management tools shall provide the capability to modify the data base structure while adhering to established standards.	essential	demo	T11-03.03.00	A100210.000 A100220.000 A100210.040 A100220.040
IMS-1460	The Virtual IMS Information Management software shall provide the capability to electronically load data base structures and their content.	essential	demo	T10-04.02.00	A100210.000 A100220.000 A100210.040 A100220.040
IMS-1470	The Virtual IMS Information Management software data base management system shall provide, at a minimum, the capability to select data for retrieval by: a. Boolean operators b. Relational operators c. Attribute values d. Combinations thereof	essential	demo	T11-02.00.00	A100210.000 A100220.000 A100210.040 A100220.040
IMS-1480	The Virtual IMS Information Management software shall allow a user to locate and identify desired data without having detailed knowledge of the systems: a. Architecture b. Data base management system c. Data base structure d. Query languages e. Data formats	essential	demo	T11-02.00.00 T11-03.06.01 T11-03.08.00	A100210.000 A100220.000 A100210.010 A100210.030 A100220.010 A100220.030

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
IMS-1490	The IMS toolkit software shall provide users, including those working from ICCs and ISTs, with the capability to locally construct the requests for IMS services, forward the requests to the IMS server, and obtain request results.	essential	test	T11-01.05.00	A100210.000 A100220.000 A100210.030 A100220.030
IMS-1500	The IMS toolkit software shall provide the tools to support user preparation or automated generation of metadata, for example, directory, inventory, and guide (documentation/reference material) entries.	essential	test	T11-01.05.00	A100210.000 A100220.000 A100210.040 A100220.040
IMS-1505	The IMS toolkit software shall provide the tools to simulate an on-line IMS session for training sessions.	fulfillment	test	B13.01.01	A100210.000 A100220.000 A100210.040 A100220.040
IMS-1510	The IMS data visualization toolkit capabilities shall be portable and execute on ECS supported workstations and appropriate ECS facility computers.	essential	test	B11.08.03 T11-01.04.00	A100210.000 A100220.000 A100210.010 A100210.020 A100210.030 A100220.010 A100220.020 A100220.030
IMS-1530	The IMS data visualization toolkit shall provide the capability to visualize data in raster and vector formats and to visualize animated products.	essential	demo	T11-01.04.03	A100210.000 A100220.000 A100210.010 A100210.020 A100210.030 A100220.010 A100220.020 A100220.030
IMS-1540	The IMS toolkit software shall provide the capability to generate, at a minimum: a. Two-dimensional plots (x-y plots, scatter plots, profiles, histograms) b. Three-dimensional plots c. Contour plots d. Three-dimensional surface diagrams	essential	demo	T11-01.04.04 T11-01.04.05	A100210.000 A100220.000 A100210.010 A100210.020 A100210.030 A100220.010 A100220.020 A100220.030
IMS-1550	The IMS toolkit data visualization tools shall provide capabilities for image manipulation (e.g., pan, zoom, color, contrast).	essential	demo	T11-01.04.02	A100210.000 A100220.000 A100210.010 A100210.020 A100210.030 A100220.010 A100220.020 A100220.030
IMS-1570	The IMS toolkit software shall provide statistical analysis capabilities.	essential	test	T11-01.05.00	A100210.000 A100220.000 A100210.010 A100210.020 A100210.030 A100220.010 A100220.020 A100220.030
IMS-1600	The IMS shall provide access to the following communication services at a minimum: a. File transfer b. Multi media mail c. Remote log-on d. Electronic Bulletin Board e. Access to other networks	essential	demo	B11.08.04 B11.08.05 T10-04.01.02 T10-04.02.00 T10-04.03.00 T10-04.04.00	A100120.000 A100120.110

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
IMS-1620	The IMS element shall collect the management data used to support the following system management functions: a. Fault Management b. Configuration Management d. Accountability Management e. Performance Management f. Security Management g. Scheduling Management.	essential	test	T10-02.01.02 T10-02.04.00 T10-03.04.00 T10-05.01.00 T13-01.03.01 T13-01.03.02 T13-01.03.03 T13-01.04.01 T13-01.05.01 T13-01.05.02 T13-01.05.03 T13-01.05.06 T13-01.06.00 T13-01.07.00 B13.05.00	A080170.000 A080610.000 A080610.020
IMS-1630	The IMS shall provide the capability to receive from the SMC, directives to include at a minimum: a. Directives for integration, testing, and simulation b. Maintenance directives c. Configuration management directives d. Logistics management directives e. Training management directives f. Fault management directives g. Security directives	fulfillment	demo	T13-01.01.00	A080130.000 A080130.010
IMS-1640	The IMS shall provide to the SMC, status to include at a minimum: a. Integration, testing, and simulation status b. Maintenance status c. Logistics status d. Training information	fulfillment	demo	T13-01.08.12 B13.05.00	A080420.040 A080430.020 A080440.010 A080520.010
IMS-1646	The IMS shall provide to the SMC a record of data orders for the purposes of maintaining a full and complete history of all data orders.	fulfillment	demo	T12-02.27.00	A100120.000 A100120.060
IMS-1650	MS operations data shall contain information on: a. System utilization at the IMS b. Outstanding data distribution requests c. Outstanding processing requests d. Outstanding data acquisition requests	critical	test	B13.05.00	A100120.000 A080490.000 A080620.000 A080490.120 A100120.110 A080620.020
IMS-1660	The IMS shall provide to the SMC a full and complete history of all IMS resources used by science investigators including, at a minimum: a. CPU utilization b. Amount of user storage c. Connect time d. Session histories	essential	test	T13-01.02.05 T13-01.08.04 T13-01.08.05	A100120.000 A080490.000 A080490.120 A100120.110
IMS-1665	he IMS shall provide to the SMC, IMS services usage by each user (to include at a minimum user name, IMS service identification, date/time stamp, time expended, facilities used) for later reporting and determination of access patterns.	fulfillment	test	T13-01.08.11	A080490.000 A080620.000 A080490.120 A080620.020
IMS-1680	The IMS status monitoring function shall provide the capability to distribute reports on a periodic basis to a predefined list of report recipients.	essential	demo	T13-01.08.00	A100120.000 A100120.110
IMS-1690	The IMS status monitoring function shall provide the capability to disseminate reports on-line electronically and off-line on either paper or electronic media.	essential	demo	T13-01.08.00	A100120.000 A100120.110

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
IMS-1700	The IMS shall provide the capability to generate reports on: a. The backlog of data distribution requests b. The backlog of processing requests c. The backlog of data acquisition requests d. Data quality assessment e. Daily IMS operations summaries f. IMS performance summaries	critical	test	T12-01.08.15 T13-01.08.02 T13-01.08.09 B13.05.00	A100120.000 A100120.110
IMS-1720	The IMS shall provide the capability to produce reports that relate data sets to: a. Processing algorithms used for data generation at the PGS b. Software used for data generation at the PGS c. Parameters used for data generation at the PGS d. Data recipients	essential	test	T13-01.08.08	A100120.000 A100120.020 A090520.020
IMS-1730	The IMS shall provide the capability to produce reports that trace the data product back to the source instrument.	essential	test	T13-01.08.13	A100120.000 A100120.020
IMS-1740	The IMS shall produce cross reference reports (by user and data set) of processing performed, data sets produced, supporting data used, and data recipient.	essential	test	T13-01.08.13	A100120.000 A080490.000 A100120.020 A080490.120
IMS-1760	The IMS shall send detected hardware faults to the SMC, to include at a minimum: a. IMS processors b. IMS network interfaces c. Storage devices	essential	demo	T13-01.03.01 B13.05.00	A080490.000 A080490.070
IMS-1765	The IMS shall be developed with configuration-controlled application programming interfaces (APIs) that will be capable of supporting development of the following extensions to the ECS IMS by the DAACs, ECS and other users: a. Addition of metadata fields that are unique to the data maintained at a specific DAAC b. Addition of documents for use as guide metadata for DAAC-specific data productmission essential	essential	test	T12-02.03.00 T12-02.04.00 T12-02.07.00 T12-02.08.00 B15.08.00 T11-01.04.00 T12-02.09.00 B11.03.05	A100120.000 A100120.090
IMS-1790	The IMS shall provide, based upon the data model defined in Appendix C, sufficient storage for, at a minimum: a. Directory metadata b. Guide (documentation/reference material) metadata c. Inventory metadata d. System space, LSM data, and data base system overhead e. Metadata staging area f. Spacecraft housekeeping and ancillary data metadata g. Science processing library software metadata h. Summmission critical	critical	test	B15.11.01	A080410.000 A080410.040
IMS-1800	The IMS design and implementation shall have the flexibility to accommodate 100% expansion in processing and storage capacity without major changes to the IMS hardware and software design. This expansion capacity shall apply to the total at-launch requirement plus the yearly product growth requirement specified in Appendix C.	fulfillment	analysis	B15.11.01	A080320.000 A080320.010

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
PGS-0140	The PGS shall provide tools to help the PGS staff create and modify SDPS plans, schedules, and lists.	essential	test	T12-01.01.00 T12-01.02.00 T12-01.03.00 T12-01.04.00 T12-01.05.00 T12-01.06.00 T12-01.08.00 T12-01.10.00 T12-01.12.00	A090310.000 A090320.000 A090310.020 A090320.020
PGS-0150	The PGS shall receive from the collocated DADS data availability schedules for remote DADS, EDOS, SDPF, the ADCs.	essential	test	T12-01.01.01 B12.02.02 B12.02.03	A120510.000 A090210.000 A090220.000 A090230.000 A090240.000 A090250.000 A120510.010 A120510.030 A090250.020 A090230.020 A090240.020 A090260.020 A090210.020 A090210.100 A090260.000 A090270.020
PGS-0160	The PGS shall receive standing orders, changes to standing orders, and product requests from the IMS.	essential	test	T12-01.05.00 T12-01.11.00	A100120.000 A100120.060
PGS-0165	The PGS shall accept priority processing requests from the IMS.	essential	test	T12-01.08.00	A090530.000 A090530.010 A090530.020
PGS-0170	The PGS shall receive priority assignments, schedule conflict resolutions, and other operational directives.	essential	test	T10-03.04.00 T12-01.08.00 B12.02.02 B12.03.00	A090530.000 A090530.020
PGS-0180	The PGS shall receive a notice from DADS when data that it has received is available.	essential	test	T12-01.07.00 T12-02.22.08 T12-02.23.06 T12-02.26.01 T12-02.26.02 T12-02.26.03 T12-02.26.04 B12.02.01	A090210.000 A090220.000 A090230.000 A090240.000 A090250.000 A090110.020 A090120.020 A090140.020 A090250.020 A090230.020 A090240.020 A090260.020 A090210.020 A090210.100 A090260.000 A090270.020
PGS-0190	The PGS shall coordinate with the DADS on the staging of data for product generation.	essential	test	T12-01.01.00 T12-01.03.00 T12-01.04.00 T12-01.06.00 T12-01.08.00 T12-01.10.00 T12-01.12.00 B12.02.02 B12.03.00	A090110.000 A090120.000 A090130.000 A090120.040 A090130.040 A090140.040 A090110.040

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
PGS-0210	The PGS shall maintain an algorithm processing control language capable of constructs (e.g., if-then-else) based on the complexities of the PGS. This control language shall be utilized in conjunction with a database of product specifications that contains the recipe for the generation of all Standard Products allocated to that PGS including, at a minimum: a. The algorithm(s) to be used b. Thmission essential	essential	test	T12-01.03.00 T12-01.04.00 T12-01.05.00 T12-01.06.00 T12-01.08.00 T12-01.10.00	A090110.000 A090120.000 A090130.000 A090310.000 A090320.000 A090310.040 A090320.090 A090310.090 A090320.040
PGS-0220	The PGS shall create a reprocessing plan containing at a minimum: a. A list of processing tasks needed to carry out each productÔs reprocessing b. Estimated schedule for each task c. The order in which tasks will be executed	essential	test	T10-03.04.02 T12-01.10.00 B12.02.08	A090310.000 A090320.000 A090310.020 A090320.020
PGS-0230	The PGS shall base the PGS reprocessing plan on, at a minimum: a. Requests received from the IMS b. SMC directives c. The Standard Product specifications	essential	test	T12-01.10.00	A090310.000 A090320.000 A090310.020 A090320.020
PGS-0240	The PGS shall perform reprocessing according to the PGS reprocessing plan and the availability of resources.	essential	test	T10-03.04.02 T12-01.10.00 B12.02.08	A090310.000 A090320.000 A090310.040 A090320.090 A090310.090 A090320.040
PGS-0250	The PGS shall schedule product generation when all inputs required to generate a Standard Product for which there is a current order (from IMS) are available. Entries in the schedule shall contain, at a minimum: a. The product to be generated b. The specific algorithm(s) and calibration coefficients to be used c. The specific data sets needed and their sizes d. Priorities and deadlines that appmission essential	essential	test	T12-01.06.00 T12-01.07.00 T12-01.08.00 T12-01.09.00	A100120.000 A100120.050
PGS-0260	The PGS shall schedule other functions, including, at a minimum: a. File backups b. File maintenance c. Calibration data handling	essential	test	T10-03.01.00 T10-03.05.00 T10-03.06.00	A090530.000 A090530.010 A090530.020
PGS-0270	The PGS shall provide the capability to perform the following functions, at a minimum: a. Allocate tasks among processors b. Suspend execution of tasks c. Resume execution of a suspended task d. Cancel execution of tasks e. Request and verify the staging and/or destaging of data stored in the DADS	essential	test	T12-01.12.00	A090110.000 A090120.000 A090130.000 A090310.000 A090320.000 A090310.040 A090320.090 A090310.090 A090320.040
PGS-0285	The PGS shall transmit to the IMS a status message to confirm or reject a processing order. The reason for rejection shall be included.	essential	test	T12-01.09.00	A100120.000 A100120.050
PGS-0290	The PGS shall make electronic copies of its plans and schedules available to the IMS, the SMC, and the collocated DADS.	essential	test	T12-01.01.00 T12-01.06.00 T12-01.07.00 T12-01.08.00 T12-01.10.00 T12-01.12.00	A090530.000 A090530.010 A090530.020
PGS-0300	The PGS shall have the capability for an operator to interactively review and update the current data processing schedule.	essential	test	T12-01.12.00	A090530.000 A090530.010 A090530.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
PGS-0310	The PGS element shall collect the management data used to support the following system management functions: a. Fault Management b. Configuration Management c. Accounting Management d. Accountability Management e. Performance Management f. Security Management g. Scheduling Management.	essential	test	T10-05.01.00 T13-01.03.01 T13-01.03.02 T13-01.03.03 T13-01.04.01 T13-01.05.01 T13-01.05.02 T13-01.05.03 T13-01.05.06 T13-01.06.00 T13-01.07.00 B13.05.00	A080170.000
PGS-0320	The PGS shall display detected faults to the system operators.	essential	test	T13-01.03.01	A080610.000 A080610.020
PGS-0325	The PGS shall provide the SMC with scheduling and status information.	essential	test	T12-01.01.00 T12-01.06.00 T12-01.07.00 T12-01.08.00 T12-01.09.00 T12-01.10.00 T12-01.12.00 B13.03.00	A080170.000
PGS-0330	The PGS shall report detected processing system faults to the SMC.	essential	test	T10-03.05.00 T13-01.03.01 B13.03.03 B13.03.04	A080610.000 A080610.020
PGS-0340	The PGS shall utilize fault isolation tools provided by the LSM for the PGS and its subsystems.	essential	test	T13-01.03.01 B13.03.03 B13.03.04	A080610.000 A080610.030
PGS-0350	The PGS shall utilize tools provided by the LSM to support fault isolation between the PGS and external interfaces.	essential	test	T13-01.03.01	A080610.030
PGS-0360	The PGS shall generate a PGS processing log that accounts for all data processing activities.	essential	test	T12-01.08.15	A090110.000 A090120.000 A090130.000
PGS-0370	The PGS shall utilize the LSM to generate a PGS resource utilization report.	fulfillment	test	T10-03.06.05	A090110.000 A090120.000 A090130.000
PGS-0380	The PGS shall monitor its internal operations and generate a status report periodically and on request.	essential	test	B12.02.02 T10-03.06.06	A090110.000 A090120.000 A090130.000
PGS-0400	The PGS shall have the capability to monitor the status of all algorithm and calibration coefficient testing and generate algorithm and calibration test reports.	essential	test	B15.05.00	A090520.020
PGS-0410	The PGS shall have the capability to track the processing status of all products scheduled to be generated.	essential	test	T12-01.08.15	A090110.000 A090120.000 A090130.000
PGS-0420	The PGS shall provide tools to analyze system performance.	essential	test	T13-01.04.01	A090110.000 A090120.000 A090130.000 A090310.000 A090320.000 A090310.040 A090320.090 A090310.090 A090320.040
PGS-0430	The PGS shall utilize the LSM to monitor and account for data and information transfer between it and other EOSDIS elements.	essential	test	T13-01.02.01	A090110.000 A090120.000

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
PGS-0440	The PGS shall accept from the DADS L0-L4 data products. Received information shall contain at a minimum: a. Product identification b. L0-L4 data set c. Metadata required for processing d. Current date and time e. DADS identification	essential	test	B15.06.00 T15-01.01.03 T15-01.02.03 T15-01.03.03 T15-01.04.03 T15-01.05.03 T15-01.09.03	A080180.000 A080180.050 A080180.060 A080180.070 A080180.080
PGS-0450	The PGS shall accept from the DADS ancillary data sets. Received information shall contain at a minimum: a. Product identification b. Ancillary data set c. Metadata required for processing d. Current date and time e. DADS identification	essential	test	T10-01.05.00 B15.06.00	A080180.000 A080180.040
PGS-0470	The PGS shall have the capability to produce each Standard Product as specified in that product's Standard Product specification.	essential	test	T12-01.03.00 T12-01.05.00	A090110.000 A090120.000 A090130.000 A090110.020 A090120.020 A090120.040 A090130.040 A090140.030 A090140.040 A090110.040
PGS-0480	The PGS shall have the capability to perform all its processing based on priority.	essential	test	T12-01.06.00 T12-01.08.00	A090110.000 A090120.000 A090130.000 A090310.000 A090320.000 A090120.040 A090130.040 A090140.040 A090310.040 A090320.090 A090310.090 A090320.040 A090110.040
PGS-0490	The PGS shall have the capability to access and use, for the generation of Standard Products, information such as: a. Digital terrain map databases b. Land/sea databases c. Climatology databases d. Digital political map databases	essential	test	T12-01.06.00 T12-01.07.00 T12-01.08.00 T12-01.09.00 B13.03.01	A090110.000 A090120.000 A090130.000 A090120.040 A090130.040 A090140.040 A090110.040
PGS-0500	The PGS shall have the capability to generate Level 1 through 4 Standard Products using validated algorithms and calibration coefficients provided by the scientists.	essential	test	T12-01.06.00 T12-01.07.00 T12-01.08.00 T12-01.09.00	A090110.000 A090120.000 A090130.000 A090120.040 A090130.040 A090140.040 A090110.040
PGS-0510	The PGS shall have the capability to generate metadata (see Appendix C) according to the algorithms provided by the scientists and associate this metadata with each Standard Product generated.	essential	test	T12-01.06.00 T12-01.07.00 T12-01.08.00 T12-01.09.00	A090110.000 A090120.000 A090130.000 A120530.000 A120530.010
PGS-0512	The PGS shall generate unique granule IDs for all products generated at the PGS.	essential	test	T12-01.06.00 T12-01.07.00 T12-01.08.00 T12-01.09.00	A090110.000 A090120.000 A090130.000

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
PGS-0520	The PGS shall have the capability to generate data products from any single data input or combination of data inputs according to the algorithms provided by the scientists.	essential	test	T12-01.06.00 T12-01.07.00 T12-01.08.00 T12-01.09.00	A090110.000 A090120.000 A090130.000
PGS-0540	The PGS shall reprocess specified science data using original or updated algorithms provided by the scientists.	essential	test	T12-01.10.00	A090310.000 A090320.000 A090310.040 A090320.090 A090310.090 A090320.040
PGS-0550	The PGS shall reprocess science data using the original or updated (provided by the scientists) calibration coefficients.	essential	test	T12-01.10.00	A090310.000 A090320.000 A090310.040 A090320.090 A090310.090 A090320.040
PGS-0560	The PGS shall maintain copies of generated products to be used as inputs to other scheduled products for processing efficiency.	essential	test	T12-02.25.00	A090110.000 A090120.000 A090130.000
PGS-0590	The PGS shall have the capability to indicate the temporary status of data stored in the DADS that is awaiting QA or human interaction in product production.	essential	test	T12-01.08.00 B12.04.00	A090310.000 A090320.000 A090310.040 A090320.090 A090310.090 A090320.040
PGS-0600	The PGS shall provide an algorithm and calibration test and validation environment that is fully compatible with but isolated from the operational production environment.	essential	test	T10-02.00.00	A090520.020
PGS-0602	The PGS shall have the capability to accept POSIX - compliant science algorithms and compile algorithm source code written in a standard programming language (e.g., Fortran, C, Ada).	essential	test	T10-02.01.03 T10-02.01.04 T10-02.01.05	A090520.020
PGS-0605	The PGS shall process pre-launch test data and provide test data product samples for user verification.	essential	test	T10-02.01.06 T10-02.01.07 T10-02.01.08	A090510.000 A090510.010 A090510.020 A090510.030
PGS-0610	The PGS shall accept from the SCFs new or modified calibration coefficients to be validated in the test environment. Calibration coefficients shall contain the following information at a minimum: a. Identification of coefficient data set b. Calibration coefficients values c. Author and version number d. Identification of related processing algorithm e. Start and stop date/time of applicabilitymission essential	essential	test	T10-02.01.01	A090540.000
PGS-0620	The PGS shall have the capability to validate received calibration coefficients for completeness and correct format.	essential	test	T10-02.01.01 T10-02.01.03	A090110.000 A090120.000 A090130.000
PGS-0630	The PGS shall send the DADS new or modified calibration coefficients which shall contain the following information at a minimum: a. Identification of coefficient data set b. Calibration coefficients values c. Author and version number d. Identification of related processing algorithm e. Start and stop date/time of applicability f. Documentation	essential	test	T10-02.01.01	A090540.000

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
PGS-0640	The PGS shall accept from the SCF new or modified Standard Product algorithms to be tested at the processing facility. This software shall be received into the test environment and shall contain the following information at a minimum : a. Algorithm identification b. Algorithm source code c. List of required inputs d. Processing dependencies e. Test data and procedures f. Algorithm documentation	essential	test	T10-02.01.01	A090520.030 A120520.010
PGS-0650	The PGS shall have the capability to validate required operational algorithm characteristics prior to scheduling algorithm test time. These characteristics shall be include at a minimum: a. Language b. Operational impacts (e.g., algorithm software size, required resources) c. Algorithm documentation d. Data handling standards as appropriate e. Units and models used f. Operational compatibility mission essential	essential	test	T10-02.01.01 T10-02.01.03 T10-02.02.00	A090520.020
PGS-0860	The PGS shall have the capability to schedule and coordinate algorithm and calibration coefficient test time in the test environment with the appropriate SCF.	essential	test	T10-02.01.06	A090520.020
PGS-0870	The PGS shall have the capability to schedule algorithm test resources that do not interfere with the operational.	essential	test	T10-02.01.06 T10-03.01.00	A090520.020
PGS-0900	The PGS shall send test products to the SCF for analysis. These shall contain the results of algorithm testing and shall contain the following information at a minimum: a. Algorithm identification b. Test time(s) c. Processor identification d. Test results	essential	test	T10-02.01.08 B10.01.01	
PGS-0910	The PGS shall have the capability to support analysis of algorithm test results.	essential	test	T10-02.01.07	
PGS-0920	The PGS shall have the capability to validate, through testing, that SCF processing algorithms will execute properly in the operational environment. Validation shall include final compilation and linkage of the source code and testing to verify proper software execution in the operational environment based on indicated data and test results provided by the SCF and the investigator, but shall mission essential	essential	test	T10-02.01.00	A090520.020
PGS-0925	The PGS shall validate algorithms used for conversions, calibrations and transformations of EOS engineering data.	essential	test	T10-02.01.00	
PGS-0930	The PGS shall have the capability to transfer validated algorithm software and calibration coefficients from the test environment to the operational environment to be used in the production of Standard Products.	essential	test	B10.00.00	A090520.040
PGS-0940	The PGS shall provide storage for all candidate algorithms' software executables and calibration coefficients.	essential	test	T10-02.01.01	A090520.040

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
PGS-0950	The PGS shall interface to maintain configuration control of all algorithms and calibration coefficients used in operational Standard Product production. Controlled information shall contain at a minimum: a. Source code including version number and author b. Benchmark test procedures, test data, and results c. Date and time of operational installation d. Compiler identification and version e. mission essential	essential	test	T10-02.01.02 T13-01.05.01 T13-01.05.02 T13-01.05.03	A090520.040
PGS-0960	The PGS shall send the DADS new or modified algorithms. This delivery shall contain the following information at a minimum: a. Source code including version number and author b. Benchmark test procedures, test data and results c. Date and time of operational installation d. Final algorithm documentation e. Calibration coefficient values	essential	test	T12-02.01.00	A090520.040
PGS-0970	The PGS shall provide _le access subroutines that enforce compliance with the adopted standard ECS formats.	essential	test	T10-02.01.03	A090520.000
PGS-0980	The PGS shall provide job control routines that provide all required task parameters to the Standard Product software.	essential	test	T10-02.02.02	A090540.000 A090540.010 A090540.020
PGS-0990	The PGS shall provide error logging subroutines for use by Standard Product software in notifying the system operators of conditions requiring their attention.	essential	test	T10-02.02.02	A090110.000 A090120.000 A090130.000
PGS-1000	The PGS shall provide error logging subroutines for use by Standard Product software in notifying users of conditions requiring their attention.	essential	test	T10-01.02.02	A090110.000 A090120.000 A090130.000
PGS-1010	The PGS shall provide mass storage allocation subroutines that provide algorithms with a means for dynamic allocation of storage for temporary files.	essential	test	T12-01.06.00 T12-01.07.00 T12-01.08.00 B12.02.02 B12.03.00	A080170.020
PGS-1015	The PGS shall provide ancillary data access subroutines that provide Standard Product software access to ephemeris data (e.g., solar, lunar, and satellite ephemeris), Earth rotation data, and time and position measurement data. These subroutines shall perform operations such as: a. Interpolation b. Extrapolation c. Coordinate system conversion	essential	test	T12-01.06.00 T12-01.07.00 T12-01.08.00	A090520.000
PGS-1020	The PGS shall provide mathematical libraries including: a. Linear algebra and analysis (e.g., LINPAC, IMSL) b. Statistical calculations (e.g., SAS, SPSS)	essential	test	T11-01.06.00	A090110.000 A090120.000 A090130.000
PGS-1025	The PGS shall provide a Science Processing Library containing routines such as: a. Image processing routines b. Data visualization routines c. Graphics routines	essential	test	T11-01.04.00	A090110.000 A090120.000 A090130.000
PGS-1030	The PGS shall provide a toolkit to the SCF containing versions of the routines specified in requirements PGS-0970 to PGS-1020.	essential	test	T11-01.05.00	A090110.000 A090120.000 A090130.000 A090310.000 A090320.000 A090310.040 A090320.090 A090310.090 A090320.040

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
PGS-1050	The PGS shall provide the capability to perform both automatic and manual QA of generated products.	essential	test	B12.04.00	A090110.000 A090120.000 A090130.000
PGS-1060	The PGS shall have the capability to perform automatic QA of generated products utilizing algorithms provided by the scientists.	essential	test	B12.04.00	A090110.000 A090120.000 A090130.000
PGS-1080	The PGS shall have the capability to provide an inventory and review copy of generated products to the data product quality staff before the product is sent to the DADS for storage.	essential	test	B12.02.02 B12.03.00	A090110.000 A090120.000 A090130.000
PGS-1090	The PGS shall have the capability to provide the data product quality staff with the algorithms, calibration coefficient tables, input data sets, or other information related to product processing for the purpose of reviewing and analyzing the quality of production.	essential	test	T10-02.04.00	A090110.000 A090120.000 A090130.000 A090310.000 A090320.000 A090310.050 A090320.100 A090310.100 A090320.050
PGS-1100	The PGS shall have the capability to accept product quality data input.	essential	test	B12.04.00	A090110.000 A090120.000 A090130.000 A090310.000 A090320.000 A090310.050 A090320.100 A090310.100 A090320.050
PGS-1110	The PGS shall have the capability to associate data quality with a generated product.	essential	test	B12.04.00	A090110.000 A090120.000 A090130.000 A090310.000 A090320.000 A090310.050 A090320.100 A090310.100 A090320.050
PGS-1120	The PGS shall send the DADS updated metadata provided by the data product quality staff relating to product QA review. This QA review metadata shall contain the following information at a minimum. a. Product ID b. QA Approval field c. Other metadata	essential	test	B12.04.01	A090310.000 A090320.000 A090310.050 A090320.100 A090310.100 A090320.050 A120530.000 A120530.010
PGS-1130	The PGS shall receive product QA from the SCF which shall describe the results of the scientists product quality review at an SCF. Product QA shall contain the following information at a minimum: a. Identification of product b. QA results c. Product storage and processing instructions	essential	test	B12.04.02	A100210.000 A100220.000 A100210.020 A100220.020 A090310.050 A090320.100 A090310.100 A090320.050

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
PGS-1140	The PGS shall have the capability to provide the data product quality staff with the Product QA data from the SCF.	essential	test	B12.04.02	A100210.000 A100220.000 A090310.000 A090320.000 A100210.020 A100220.020 A090310.050 A090320.100 A090310.100 A090320.050
PGS-1150	The PGS shall have the capability to accept the identification of products that are not to be stored in the DADS due to inferior quality or other reasons. The reason for all such actions shall also be specified.	essential	test	B12.04.02	A090110.000 A090120.000 A090130.000 A090310.000 A090320.000 A090310.050 A090320.100 A090310.100 A090320.050
PGS-1160	The PGS shall have the capability to accept from the product quality staff commands to suspend specified production processing due to inferior quality or other reasons in line with SMC guidelines. The reasons for all such actions shall also be specified.	essential	test	B12.02.03	A090310.000 A090320.000 A090310.050 A090320.100 A090310.100 A090320.050
PGS-1170	The PGS shall have the capability to identify data products awaiting QA that have not been reviewed within the amount of time allocated for QA.	essential	test	B12.04.02	A090110.000 A090120.000 A090130.000 A090310.000 A090320.000 A090310.050 A090320.100 A090310.100 A090320.050
PGS-1175	The PGS shall maintain a list of products requiring QA by SCF or the PGS.	essential	test	B12.04.02	A100210.000 A100220.000 A100210.020 A100220.020 A090310.050 A090320.100 A090310.100 A090320.050
PGS-1180	The PGS shall have the capability to update the processing status of a given product as a result of a QA timeout.	essential	test	B12.04.02	A090110.000 A090120.000 A090130.000 A090310.000 A090320.000 A090310.050 A090320.100 A090310.100 A090320.050
PGS-1190	The PGS shall have the capability to log the identification of all non-stored products or suspended processing directed by the data product quality staff to support the maintenance of performance statistics.	essential	test	T12-01.08.15	A090110.000 A090120.000 A090130.000 A090310.000 A090320.000 A090310.050 A090320.100 A090310.100 A090320.050

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
PGS-1200	The PGS shall have the capability to generate a data quality assessment report including a description of the quality of each processed product as well as the quality of each of the products input data sets.	essential	test	T12-01.08.15	A090110.000 A090120.000 A090130.000 A090310.050 A090320.100 A090320.050
PGS-1210	The PGS shall coordinate the disposition of PGS data stored temporarily in the DADS.	essential	test	T10-03.05.03	A090310.050 A090320.100 A090310.100 A090320.050
PGS-1220	The PGS shall have the capability to receive GFE databases and associated tools, including COTS and public domain databases, and maintain them as required as inputs to product generation: Example databases are: a. Digital terrain map databases b. Land/sea databases c. Climatology databases d. Digital political map databases	essential	test	T10-04.02.00 T11-02.00.00	A090110.000 A090120.000 A090130.000 A090310.040 A090320.090 A090310.090 A090320.040
PGS-1240	The PGS shall send the generated Level 1 to Level 4 Standard Products to the DADS. These products shall contain the following information at a minimum: a. Product identification b. L1-L4 data set c. Product processing priority d. Current date and time e. Associated metadata	essential	test	T12-02.07.01 T12-02.26.01 T12-02.26.02 T12-02.26.03 B12.02.02 B12.03.00	A090110.000 A090120.000 A090130.000 A090310.040 A090310.050 A090320.090 A090320.100 A090310.090 A090310.100 A090320.040 A090320.050
PGS-1270	The PGS design and implementation shall have the flexibility to accommodate PGS expansion up to a factor of 3 in the processing capacity with no changes to the processing design, and up to a factor of 10 without major changes to the processing design. Such expansion in capacity or capability shall be transparent to existing algorithms or product specifications. This requirement shall apply tmission fulfillment	fulfillment	analysis	B15.11.01	A120630.000 A120630.010
PGS-1300	Each PGS shall provide a processing capacity four times the size necessary to process all EOS science data for which it is responsible, including interdisciplinary investigator processing. It shall be possible to effectively utilize the entire reprocessing capacity at each site on computers with similar architectural design (e.g., parallel processors), for a single algorithm or any mix of algmision essential	essential	analysis	B15.11.03	A120630.000 A120630.010
PGS-1301	The effective CPU processing rates used for sizing purposes in PGS-1300 shall not be greater than 25% of peak-related CPU capacity.	essential	analysis	B15.11.03	A120630.000 A120630.010
PGS-1310	The processing capacity necessary to process all EOS science data for which each PGS is responsible shall be based on the data volumes and at-launch instrument processing load requirements (MFLOPS) assigned to each DAAC.	essential	analysis	B15.11.03	A120630.000 A120630.010
PGS-1315	Each PGS shall have the capacity to support I/O to temporary and intermediate storage or multiple passes over input products as required by individual science algorithms.	essential	analysis	B15.11.03	A120620.000 A120620.030

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
PGS-1400	The PGS shall be developed with configuration-controlled application programming interfaces (APIs) that will be capable of supporting development and integration of new algorithms developed at each DAAC to support DAAC value-added production.	fulfillment	test	T10-02.02.00	A080310.000 A080310.020
PGS-1410	The PGS shall provide the capability for each DAAC to add to the data production environment toolkit DAAC-developed software required to support discipline specific needs.	fulfillment	test	T11-01.05.03	A090110.000 A090120.000 A090130.000
SDPS0010	The SDPS shall provide CSMS with operational, data processing, data quality and accounting status.	essential	test	T10-03.05.00 T12-01.06.00 T12-01.07.00 T12-01.08.00 T12-01.09.00 T12-01.10.00 T12-01.12.00	A080530.010 A080180.090
SDPS0015	The SDPS shall receive directives on priorities and policy, from the SMC.	essential	test	T12-01.06.00 T12-01.07.00 T12-01.08.00 T12-01.09.00 T12-01.10.00 T12-01.12.00	A080180.000 A080130.000 A080130.010 A080180.090
SDPS0016	The SDPS shall coordinate and resolve schedule conflicts between IMS, DADS and PGS.	essential	test	T12-01.06.00 T12-01.07.00 T12-01.08.00 T12-01.09.00 T12-01.10.00 T12-01.12.00	A080220.000 A080230.000 A080220.010 A080220.020 A080220.030 A080230.030
SDPS0020	The SDPS shall receive EOS science, and engineering ancillary data from the EDOS, and SDPF, and non-EOS ancillary data (as listed in Appendix C) from ADCs.	critical	test	T15-04.07.01 T15-04.07.02 T15-04.07.03 T15-04.07.04 B15.06.00 T15-01.07.01 T15-01.09.01 T15-02.01.00 T15-02.06.00 T10-01.08.00	A120210.000 A120510.000 A120520.000 A080180.000 A120210.010 A120210.020 A120210.030 A120510.030 A120540.010 A120540.020 A090110.010 A090120.010 A090130.030 A090140.010 A120540.000 A080180.040 A080180.050 A080180.060 A080180.070 A080180.080
SDPS0025	The SDPS shall accept scientific and non-scientific investigator supplied dataset specific data transformations.	essential	test	T11-01.04.00 T11-01.05.04	A090520.040
SDPS0030	The SDPS shall produce Standard Products (as listed in Appendix C, including prototype products on a time-available basis) for EOS instruments based on the algorithms source code and calibration coef_cients supplied by EOS scientists.	essential	test	T12-01.06.00 T12-01.07.00 T12-01.08.00 T12-01.09.00 T12-01.10.00 T12-01.12.00	A090110.000 A090120.000 A090130.000
SDPS0031	The SDPS shall generate browse data and metadata for routing to the requesting users.	essential	test	T12-02.22.00 T12-02.23.00	A100120.000 A100120.090

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
SDPS0032	The SDPS shall provide the PIs and the other science users with the updated metadata for the assessment of data product quality.	essential	test	T12-02.00.00	A100210.000 A100220.000 A100210.010 A100210.020 A100220.010 A100220.020
SDPS0050	The SDPS shall archive, manage, quality check, and account for the generated data products, and distribute the data products to the appropriate destinations as required.	essential	test	T12-02.00.00 B15.06.00 B15.10.00 B12.04.00	A080180.000 A090110.000 A090120.000 A090110.050 A090120.050 A090210.140 A080180.040
SDPS0080	The SDPS shall archive, manage, and quality check and account for all science data received from the EPDSs and ancillary data received from the EPDSs, the SCFs, the ADCs, other DAACs, PIs and the other EOS science users.	essential	test	T12-02.00.00 B15.06.00 B12.04.00	A120510.000 A090210.000 A090230.000 A090250.000 A120510.030 A090230.080 A090240.080 A090260.080 A090210.080 A090210.100 A090210.140 A090210.160 A120510.020 A090260.000 A090270.080
SDPS0085	The SDPS shall support data products transitioned from V0 at a level of service equal to or greater than the level of service provided for those same data products by V0. The level of service are defined in Appendix C of the ESDIS Project Level 2 Requirements, Volume 5 EOSDIS Version 0.	essential	test	T12-02.03.02	A100130.000 A100130.010
SDPS0090	The SDPS shall interface with the PIs and the other science users to support the development and testing of data product algorithms and QA of produced data products.	essential	inspect	T10-02.01.08 T10-02.04.00 B12.04.00	A100210.000 A100220.000 A100210.010 A100210.020 A100220.010 A100220.020 A090520.040
SDPS0091	The SDPS shall receive a quality report that is generated and transmitted by the PIs or the other science users, and appended to the data products being archived by the SDPS.	fulfillment	test	T10-02.04.00 T12-02.08.10	A100210.000 A100220.000 A100210.020 A100220.020
SDPS0095	The SDPS shall provide science user interfaces that are individually tailorable including settable preferences, user defined keywords, query save capabilities, and screen layout preferences.	fulfillment	test	T11-01.05.03 B13.01.01	A100120.000 A100120.050
SDPS0100	The SDPS shall be responsible for delivery of EOS data and data products to the ADCs, and the other science users via EOSDIS networks and on a variety of physical media.	essential	test	T12-02.22.00 T12-02.23.00 B13.02.02 B13.03.05 B13.04.02	A080490.090
SDPS0110	The SDPS shall be responsible for coordination of the transfer of production data from EDOS and SDPF.	essential	test	B15.01.00 T12-02.22.08 T12-02.22.11	A080180.000 A080180.050 A080180.060 A080180.070 A080180.080
SDPS0120	The SDPS shall be capable of operating in a 24-hour a day, 7-day a week mode.	essential	test	B15.11.03	A120610.000 A120610.010

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
SDPS0130	The SDPS shall provide the capability for DAACs to exchange data products, browse data, metadata, data quality information, research results, and documentation.	essential	test	B15.10.00 T12-02.22.00 T12-02.23.00	A080180.000 A080180.090
SDPS0140	The SDPS shall support element, system, and subsystem test activities throughout the development phase.	essential	inspect	B10.00.00 B15.00.00 B11.00.00 B12.00.00 B13.00.00	A080320.000 A080310.000 A090520.040 A080310.020 A080320.010
SDPS0170	The SDPS shall accommodate growth in the instrument processing load and storage capacity without changes to the SDPS architecture or design.	essential	test	B15.11.01	A120620.000 A120620.020
SMC-0340	The SMC shall have the capability of responding to system faults within a maximum of five minutes.	critical	test	T13-01.03.01 T13-01.03.02 T13-01.03.03 B13.02.03 B13.03.04 B13.03.05 B13.04.03 B13.05.01	A120620.000 A120620.030
SMC-0350	The SMC shall have the capability of responding to security compromises within a maximum of five minutes.	critical	test	T10-05.06.03 B15.11.03	A120620.000 A120620.030
SMC-1000	The SMC shall provide application programming interfaces (APIs) for the monitoring and control of managed resources. These APIs shall provide mechanisms for: a. Capturing, by an application, of management data b. Exchanging management data between a managed application and its management agent c. Exchanging management data between a management agent and the LSM d. Performing analyses and generatimission essential	essential	test	T13-01.01.03 B13.00.00	A080130.000 A080130.010
SMC-1300	The SMC shall support and maintain the ECS policies and procedures regarding instrument and ground event scheduling, including, at a minimum: a. Mission and science guidelines b. Directives for scheduling instrument data ingest, processing, reprocessing, retrieval, and data distribution	critical	test	T13-01.02.07	A080210.000 A080210.020
SMC-1310	The SMC shall support and maintain the allocation of ground event functions and capabilities to each site and element.	essential	test	T13-01.02.08	A080210.000 A080130.000 A080130.020 A080210.020
SMC-1320	The SMC shall support and maintain priorities used in scheduling ground events.	essential	test	T13-01.02.08	A080210.000 A080130.000 A080130.020 A080210.020
SMC-1340	The SMC shall generate scheduling directives for system level, site-to-site, and element-to-element integration, testing, and simulation activities.	essential	test	B15.04.00	A080210.000 A080210.020
SMC-1360	The SMC shall generate ground resource scheduling directives, or recommendations for FOS elements, in response to emergency situations.	critical	test	T13-01.02.08	A080210.000 A080230.000 A080210.020 A080230.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
SMC-2100	The SMC shall have the capability to generate and send ground operations (i.e., non-instrument related) events to sites and elements for implementation. Ground operations events include, at a minimum, actions associated with: a. Configuring element resources b. Fault recovery c. Security d. Maintenance e. Testing f. Simulations g. Logistics h. Training i. Accounting and accountability j. Generamission essential	essential	test	T10-04.06.00 T13-01.03.01 T13-01.03.02 T13-01.03.03	A080210.000 A080410.000 A080210.030 A080410.020
SMC-2105	The LSM shall convey ground operations (i.e., non-instrument related) events to sites or elements for implementation. Ground operations events include, at a minimum, actions associated with: a. Configuring element resources b. Fault recovery c. Security d. Maintenance e. Testing f. Simulations g. Logistics h. Training classes i. Accounting and accountability j. General requests for information	critical	test	T10-04.06.00 T13-01.03.00 T13-01.05.00 T13-01.06.00 T13-01.08.00	A080410.000 A080410.020
SMC-2110	The SMC shall have the capability to generate managerial and operational directives affecting, at a minimum, an elements: a. Operational status b. Resource allocation c. Upgrade	essential	demo	T10-04.05.00	A080410.000 A080410.010
SMC-2115	The LSM shall convey for site or element implementation, the managerial and operational directives regarding the allocation or upgrade of any elementOs hardware and scientific and systems software.	essential	analysis	T10-04.05.00	A080410.000 A080410.010
SMC-2120	The SMC shall make available for automated distribution to authorized users all unlicensed toolkit software, toolkit software upgrades, and toolkit documentation.	essential	demo	T13-01.05.04 T13-01.05.05	A080170.000 A080410.000 A080410.020
SMC-2130	The SMC shall administer and distribute licenses for deployed commercial-software funded by the ECS contract, including commercial software as authorized for specific users.	essential	demo	T13-01.05.05	A080170.000 A080410.000 A080410.020
SMC-2200	The SMC shall assist each site or element, when necessary, in the performance of on-site preventive and corrective hardware and systems software maintenance.	essential	demo	T13-01.08.14	A080160.000 A080420.000 A080160.030 A080420.010 A080420.020 A080420.030 A080420.040
SMC-2205	The LSM shall support on-site preventive and corrective hardware and systems software maintenance.	critical	analysis	T13-01.08.14	A080420.000 A080420.010 A080420.020 A080420.030 A080420.040

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
SMC-2210	The SMC shall coordinate with each site or element in the management of off-site corrective hardware and systems software maintenance.	essential	demo	T13-01.08.14	A080160.000 A080420.000 A080160.030 A080420.050
SMC-2215	The LSM shall coordinate with the SMC in the management of off-site corrective hardware and systems software maintenance.	critical	analysis	T13-01.08.00	A080420.000 A080420.050
SMC-2220	The SMC shall monitor hardware and systems software maintenance status for off-site repair actions.	essential	demo	T13-01.08.00	A080160.000 A080420.000 A080160.030 A080420.050
SMC-2300	The SMC shall monitor the spares inventory within each element.	critical	demo	T13-01.08.14	A080430.000 A080430.010
SMC-2305	The LSM shall monitor the spares inventory within its element.	critical	demo	T13-01.08.14	A080430.000 A080430.010
SMC-2310	The SMC shall oversee the replenishment of spare parts for all elements.	critical	demo	T13-01.08.14	A080430.000 A080430.020
SMC-2315	The LSM shall manage the replenishment of spare parts within its element.	critical	demo	T13-01.08.14	A080430.000 A080430.020
SMC-2320	The SMC shall monitor the consumable inventory within each element for items used by the system including, at a minimum: a. Computer tapes b. Computer disks c. Computer paper	essential	demo	T13-01.08.14	A080430.000 A080430.010
SMC-2325	The LSM shall monitor the consumable inventory within its element for items used by the system including, at a minimum: a. Computer tapes b. Computer disks c. Computer paper	essential	demo	T13-01.08.14	A080430.000 A080430.010
SMC-2330	The SMC shall monitor the replenishment of consumable items for all elements.	essential	demo	T13-01.08.14	A080430.000 A080430.020
SMC-2335	The LSM shall manage the replenishment of consumable items for its element.	essential	demo	T13-01.08.14	A080430.000
SMC-2400	The SMC shall support the management of training and certification programs for ECS.	essential	demo	T10-04.06.00 T13-01.08.12	A080440.000 A080440.010
SMC-2405	The LSM shall coordinate with the SMC in managing the training program for its element.	fulfillment	analysis	T10-04.06.00 T13-01.08.12	A080440.000 A080440.010
SMC-2410	The SMC shall provide support for the development of schedules for training courses.	fulfillment	demo	T10-04.05.00	A080440.000 A080440.010
SMC-2415	The LSM shall receive from the SMC descriptions and schedules for training courses.	fulfillment	analysis	T10-04.05.00	A080440.000 A080440.010
SMC-2420	The SMC shall support the development of on-the-job training.	fulfillment	demo	T10-04.05.00	A080440.000 A080440.020
SMC-2430	The SMC shall support the development and use of training materials.	fulfillment	demo	T10-04.05.00	A080440.000 A080440.020
SMC-2450	The SMC shall support the evaluation of the effectiveness of the training programs.	fulfillment	demo	T10-04.05.00	A080440.000 A080440.020
SMC-2500	The SMC shall establish and maintain a system-wide inventory of all hardware, scientific and system software contained within ECS, including at a minimum: a. Hardware or software identification numbers b. Version numbers and dates c. Manufacturer d. Part number e. Serial number f. Name and locator information for software maintenance g. Location where hardware or software is used	essential	test	T13-01.08.14	A080450.000 A080450.010

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
SMC-2505	The LSM shall update the system-wide inventory data base consisting of all hardware, system software, and scientific software contained within its element.	critical	test	T13-01.08.14	A080450.000 A080450.030
SMC-2510	The SMC shall provide at a minimum system-wide configuration management for the operational hardware, scientific and system software, and the SMC toolkit contained within ECS. The management system shall support the migration of hardware and software upgrades into the operational environment.	essential	analysis	T10-02.01.02	A080450.000 A080450.010 A080450.030
SMC-2515	The LSM shall provide configuration management for at least the operational hardware, system software, and scientific software within its element and for the migration of enhancements into the operational system.	critical	test	T10-02.01.02	A080450.000 A080450.010 A080450.020 A080450.030
SMC-2520	The SMC shall evaluate received system enhancement requests to determine, at a minimum: a. Technical feasibility b. Implementation schedule c. Expected costs d. Existing system-wide hardware and software impacts	essential	analysis	T13-01.07.05	A080450.000 A080450.020
SMC-2530	Upon approval of a system enhancement, the SMC shall provide overall management of the implementation of the approved changes to the hardware and system software.	essential	analysis	T13-01.07.05	A080450.000 A080450.020
SMC-2535	Upon approval of an enhancement, the LSM shall facilitate the implementation of the approved changes within an elements hardware and software.	essential	analysis	T13-01.07.05	A080320.000 A080320.010
SMC-2540	Upon approval to include a fully tested enhancement to the algorithms, the SMC shall provide overall management of the implementation of the approved and modified software into the operational environment.	essential	analysis	T13-01.05.03	A080450.000
SMC-2600	The SMC shall support, control, and maintain ECS policies and procedures covering the following areas, at a minimum: a. Site or element responsibility and authority b. Resource management c. Fault recovery d. Testing e. Simulation f. Maintenance g. Logistics h. Performance evaluation i. Training j. Quality and product assurance k. Inventory management l. System enhancements m. Finance management mission fulfillment	fulfillment	inspect	T10-04.06.00 T10-05.01.00 T13-01.02.07	A080160.000 A080420.000 A080480.000 A080420.060 A080420.070 A080480.010 A080110.000 A080110.020
SMC-2605	The LSM shall support the site and element in implementing ESDIS Project policies and procedures received from the SMC covering the following areas, at a minimum: a. Element responsibility and authority b. Resource management c. Fault recovery d. Testing e. Simulation f. Maintenance g. Logistics h. Performance evaluation i. Training j. Quality and product assurance k. Inventory management l. Systmission fulfillment	fulfillment	analysis	T10-04.06.00 T10-05.01.00 T13-01.02.07	A080420.000 A080480.000 A080420.060 A080420.070 A080480.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
SMC-2610	The SMC shall provide and maintain a bulletin board service with information on ECS status, events, and news.	essential	demo	T10-04.03.00	A080480.000 A080480.020
SMC-2620	The SMC shall maintain via the ECS bulletin board service, the SMC toolkit consisting of a list of SDPS approved CASE tools and references to standards for exchanging data for scientist use.	essential	inspect	T10-04.03.00	A080480.000 A080480.010
SMC-3300	The SMC shall monitor site and element hardware status to determine their operational states including, at a minimum: a. On-line b. Failed c. In maintenance d. In test mode e. In simulation mode	essential	demo	T13-01.02.06	A080160.000 A080480.000 A080530.000 A080480.010 A080530.010
SMC-3305	The LSM shall monitor its elements hardware, and scientific and system software status to determine their operational states including, at a minimum : a. On-line b. Failed c. In maintenance d. In test mode e. In simulation mode	critical	test	T13-01.02.06	A080530.000 A080530.010
SMC-3310	The SMC shall monitor each elements schedule and execution of events.	essential	demo	T13-01.02.07	A080130.000 A080530.000 A080130.020 A080530.010
SMC-3315	The LSM shall monitor its elements schedule and execution of events.	essential	demo	T13-01.02.08	A080130.000 A080530.000 A080130.020 A080530.010
SMC-3320	The SMC shall monitor execution of ground operations events.	essential	demo	T13-01.02.08	A080530.000 A080530.010
SMC-3325	The LSM shall monitor execution of ground operations events.	critical	demo	T13-01.02.08	A080530.000 A080530.010
SMC-3330	The SMC shall compare and evaluate system-wide, site, and element actual schedule performance against planned schedule performance.	essential	demo	T13-01.04.01	A080530.000 A080530.010
SMC-3335	The LSM shall compare and evaluate its elements actual schedule performance against planned schedule performance.	critical	test	T13-01.04.01	A080530.000 A080530.010
SMC-3340	The SMC shall perform quality assurance for the overall ECS performance as well as programmatic areas that include, at a minimum: a. System quality testing, benchmarks, and audits for system enhancement implementations b. System quality checking and audits of products processed and delivered c. Quality testing and audits of site and element resource performance.	critical	analysis	T10-02.04.00	A080460.000 A080460.010
SMC-3345	The LSM shall perform quality assurance for its site/elements performance as well as programmatic areas that includes, at a minimum: a. Quality testing, benchmarks and audits for element enhancement implementations b. Quality checking and audits of products processed and delivered c. Quality testing and audits of element resource performance,	critical	analysis	T10-02.04.00	A080460.000 A080460.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
SMC-3350	The SMC shall generate, maintain, and update performance criteria and responses to performance deficiencies for system, site, and element resources and activities, such as: a. Data collection b. Product generation, QA and validation c. Reprocessing d. Data delivery to DAACs and to users e. Response to user requests f. Response to TOOs g. Response to field experiments h. Response to emergency situamissi	critical	analysis	T13-01.04.01	A120620.000 A080510.000 A120620.030 A080510.020
SMC-3355	The LSM shall implement the performance criteria from SMC (including parametric limits and operational threshold levels) for evaluating element resource performance.	essential	analysis	T13-01.04.00	A120620.000 A080510.000 A120620.030 A080510.010
SMC-3370	For each performance parameter, the SMC shall have the capability of establishing multiple levels of thresholds to include, at a minimum: a. On/off b. Pass/fail c. Various levels of degradation	essential	analysis	T13-01.04.01	A120620.000 A080510.000 A120620.030 A080510.010
SMC-3375	For each limit checked parameter, the LSM (including those thresholds directed by the SMC) shall have the capability of evaluating multiple levels of thresholds including, at a minimum: a. On/off b. Pass/fail c. Various levels of degradation	critical	test	T13-01.04.01	A120620.000 A080510.000 A120620.030 A080510.010
SMC-3380	The SMC shall evaluate overall system performance.	essential	analysis	T13-01.04.00	A120620.000 A080510.000 A120620.030 A080510.020
SMC-3385	The LSM shall evaluate system performance against the ESDIS project established performance criteria.	critical	analysis	T13-01.04.00	A120620.000 A080510.000 A120620.030 A080510.010
SMC-3390	The SMC shall generate alert indicators of fault or degraded conditions with the corrective actions.	critical	test	T13-01.03.01 T13-01.03.02 T13-01.03.03 T13-01.03.04	A120620.000 A080510.000 A120620.030 A080510.020
SMC-3395	The LSM shall generate, in response to each limit check threshold, alert indicators of fault or degraded conditions.	critical	test	T13-01.03.01 T13-01.03.02 T13-01.03.03	A120620.000 A080510.000 A120620.030 A080510.020
SMC-3397	The LSM shall generate, as needed, requests for performance testing, including, at a minimum: a. Resource to be tested b. Test purpose c. Requested test priority d. Required test environment e. Impacts to operations f. Expected test results	critical	test	T13-01.04.00	A120620.000 A080520.000 A120620.030 A080520.010
SMC-3400	The SMC shall generate, as needed, requests for performance testing that includes, at a minimum: a. Resource to be tested b. Test purpose c. Requested test priority d. Required test environment e. Impacts to operations f. Expected test results	essential	demo	T13-01.04.00	A120620.000 A080520.000 A120620.030 A080520.010 A080520.030

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
SMC-3410	The SMC shall perform short and long-term trend analysis of system, site, and element performance to include, at a minimum: a. Operational status b. Performance of a particular resource c. Maintenance activities (e.g., number of repairs per item)	essential	analysis	T13-01.04.02	A120620.000 A080530.000 A120620.030 A080530.010
SMC-3415	The LSM shall perform short and long-term trend analysis of element performance, including, at a minimum: a. Operational status b. Performance of a particular resource c. Maintenance activities (e.g., number of repairs per item)	essential	test	T13-01.04.02	A120620.000 A080530.000 A120620.030 A080530.010
SMC-3420	The SMC shall perform short and long term trend analysis of system, site, and element performance to determine the impact on resources of, at a minimum: a. Modifying system, site, or element activity allocations b. Potential enhancements to system, site, or element	essential	analysis	T13-01.04.02	A120620.000 A080530.000 A120620.030 A080530.010
SMC-3421	The SMC shall analyze user feedback information supporting the development of recommended remedial or enhancement actions.	essential	analysis	T13-01.07.04 T13-01.07.05	A080530.000 A080530.010
SMC-4300	The SMC shall support, maintain, and update system fault management policies and procedures including, at a minimum: a. Fault identification b. Fault priorities c. Recovery or corrective actions	essential	demo	T13-01.02.07	A080610.000 A080610.010
SMC-4305	The LSM shall maintain fault management policies and procedures for its element.	essential	analysis	T10-04.05.00	A080610.000 A080610.010
SMC-4310	The SMC shall perform fault analysis including, at a minimum: a. Isolation b. Location c. Identification d. Characterization	essential	analysis	T13-01.03.01 T13-01.03.02 T13-01.03.03	A080610.000 A080610.020
SMC-4311	The SMC shall have the capability to perform fault analysis to the level of, at a minimum: a. Subsystem b. Equipment	essential	demo	T13-01.03.01 T13-01.03.02 T13-01.03.03	A080610.000 A080610.020
SMC-4315	The LSM shall, at a minimum, isolate, locate, and identify faults, identify subsystem, equipment, and software faults, and identify the nature of the faults within its element.	critical	test	T13-01.03.01 T13-01.03.02 T13-01.03.03	A080610.000 A080610.020
SMC-4330	SMC shall have the capability to generate fault recovery commands, directives, and instructions to sites and elements except for faults directly related to flight operations.	essential	test	T13-01.03.04	A080610.000 A080610.040
SMC-4335	The LSM shall generate fault recovery commands, directives, and instructions within its element.	critical	test	T13-01.03.04	A080610.000 A080610.040
SMC-5300	The SMC shall, in conjunction with sites and elements, establish, support, maintain, and update security policies and procedures to include, at a minimum: a. Physical security b. Password management c. Operational security d. Data security e. Privileges f. Network security g. Compromise mitigation	essential	analysis	T10-04.05.00	A080470.000 A080470.010

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
SMC-5305	The LSM shall maintain security policies and procedures, including, at a minimum: a. Physical security b. Password management c. Operational security d. Data classifications e. Access/privileges f. Compromise mitigation	critical	analysis	T10-04.05.00	A080470.000 A080470.020
SMC-5320	The SMC shall establish, maintain, and authenticate access privileges for ECS scientific users.	critical	test	T10-05.00.00	A120520.000 A080620.000 A120540.010 A120540.000 A080620.030
SMC-5325	The LSM shall promulgate, maintain, authenticate, and monitor user and device accesses and privileges.	critical	test	T10-05.04.07	A080620.000 A080620.040
SMC-5330	The SMC shall provide support, manage, maintain, and request security testing that includes, at a minimum, password checking and control of site and element internal privileges.	critical	test	T10-05.04.00	A080620.000 A080620.030
SMC-5335	The LSM shall perform security testing that includes, at a minimum, password auditing and element internal access/privileges checking.	critical	test	T10-05.02.00	A080620.000 A080620.040
SMC-5340	The SMC shall perform security risk analyses and compromise detection.	critical	analysis	T13-01.08.07	A080620.000 A080620.030
SMC-5345	The LSM shall perform compromise (e.g., virus or worm penetration) risk analysis, and detection.	critical	analysis	T13-01.01.05 T13-01.08.06	A080620.000 A080620.040
SMC-5350	The SMC shall have the capability to initiate recovery procedures in response to a detected security compromise.	critical	demo	T10-05.06.05	A080620.000 A080620.030
SMC-5355	The LSM shall isolate the compromised area, detach the compromised input I/O, and the compromised areas output I/O until the compromise has been eliminated.	critical	test	T10-05.06.05	A080620.000 A080620.040
SMC-5365	The LSM shall generate recovery actions in response to the detection of compromises.	critical	test	T10-05.01.09	A080620.000 A080620.040
SMC-6300	The SMC shall support, maintain, and update accountability policies and procedures based on ESDIS Project policies and procedures.	essential	analysis	T10-04.05.00	A080630.000 A080630.010
SMC-6310	The SMC shall perform, as needed, security audit trails.	essential	demo	T10-05.04.07	A080630.000 A080630.020
SMC-6315	The LSM shall perform, as needed, security audit trails within its element.	essential	demo	T10-05.04.07	A080630.000 A080630.020
SMC-6320	The SMC shall perform, as needed, data and user audit trails.	essential	demo	T13-01.06.02	A080630.000 A080630.030
SMC-6330	The SMC shall establish, maintain, and update a data tracking system that, at a minimum: a. Tracks data transport from system input to system output b. Allows the status of all product-production activities to be determined	essential	test	T13-01.02.01 T13-01.02.02 T13-01.02.04 T13-01.02.03 T13-01.02.08	A080630.000 A080630.020
SMC-6335	The LSM shall, as needed, maintain and update a data tracking system that, at a minimum: a. Tracks data transport from element input to element output b. Allows the status of all product-production activities to be determined	essential	demo	T13-01.02.01 T13-01.02.02 T13-01.02.04 T13-01.02.03 T13-01.02.08	A080630.000 A080630.030
SMC-6340	The SMC shall track system configuration that, at a minimum, audits: a. Hardware resources b. Software resources	essential	demo	T13-01.02.06	A080630.000 A080630.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
SMC-6345	The LSM shall, as needed, perform configuration accountability to include, at a minimum, the audit of hardware and software resources within its element.	essential	demo	T13-01.02.06	A080630.000 A080630.030
SMC-7300	The SMC shall establish, maintain, and update the authorized users inventory to include, at a minimum: a. Users identifications b. Addresses c. Allowed privileges	critical	test	T10-05.01.00 B13.01.01	A080450.000 A080450.010
SMC-7310	The SMC shall establish, maintain, and update the approved facility and equipment inventory to include, at a minimum: a. Facility and equipment identification b. Addresses c. Allowed accesses to privileges	essential	test	T13-01.02.06	A080450.000 A080450.010
SMC-7320	The SMC shall establish, maintain, and update the system profile, as opposed to science data profile, inventory to include, at a minimum: a. Data identifications b. Data purposes c. Data locations d. Data classifications (proprietary, open, confidential, etc.) e. Data priorities	essential	test	T12-02.07.00 T12-02.08.00	A080450.000 A080450.010
SMC-8300	The SMC shall have a generalized report generator with the capability to customize output reports covering, at a minimum, data previously captured in a management DBMS including: a. All or portions of the system b. Variable amounts of time	essential	test	T13-01.08.00	A080640.000 A080640.010
SMC-8305	The LSM shall have the same report generator capability as for the SMC, except it shall be limited to generating reports covering only its particular site or its particular element.	essential	test	T13-01.08.00	A080640.000 A080640.030
SMC-8700	The SMC shall have the capability to generate a functional allocation report which gives the current allocation of ground segment functions to the sites and elements, including, at a minimum: a. The allocation of generation and storage function by standard product to each active archive b. The allocation of instrument responsibility to each ICC	essential	test	T13-01.08.13	A080640.000 A080640.020
SMC-8705	The LSM shall have the capability to generate the same types of reports listed under the SMC report generation service, except that each report shall cover only its particular site or its particular element.	essential	test	T13-01.08.13	A080640.000 A080640.040
SMC-8710	The SMC shall have the capability to generate summary configuration status reports that includes, at a minimum: a. Current status of all hardware, system and scientific software b. Reason why item not currently operational.	essential	test	T13-01.08.14	A080640.000 A080640.040 A080640.020
SMC-8750	The SMC shall have the capability to generate detailed and summary training reports, including, at a minimum: a. Training programs b. Training course schedules c. Training course contents d. Training course locations e. Training attendees	fulfillment	analysis	T13-01.08.12	A080640.000 A080640.040 A080640.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
SMC-8770	The SMC shall have the capability to generate, at a minimum, detailed and summary reports showing the inventory of: a. Hardware, system, and scientific software b. Spares and consumables	essential	test	T13-01.08.14	A080640.000 A080640.040 A080640.020
SMC-8790	The SMC shall have the capability to generate, as necessary, a list of proposed enhancements with at least these elements: a. Proposal name b. Description of enhancement c. Rationale d. Impacts e. Costs f. Milestone schedule	fulfillment	analysis	T13-01.08.15	A080640.000 A080640.040 A080640.020
SMC-8800	The SMC shall have the capability to generate detailed and summary reports indicating the overall performance of the ECS. At a minimum, they shall include: a. Scheduled versus actual data collection, processing, retrieval, and delivery of routine data b. Scheduled versus actual data collection, processing, retrieval, and delivery of user requested data c. Reason(s) for failure to meet schedulesmission essential	essential	test	T13-01.08.02	A080640.000 A080640.040 A080640.020
SMC-8820	The SMC shall have the capability to generate detailed and summary reports indicating the product generation status made in processing, reprocessing, and storage of all standard products.	essential	test	T13-01.08.13	A080640.000 A080640.040 A080640.020
SMC-8840	The SMC shall have the capability to generate detailed and summary reports indicating the performance of ground resources, including, at a minimum: a. Resource availability b. Reason for down time c. Resource utilization d. Ability of resource to meet performance criteria e. Short and long-term trend analysis and capacity planning results	essential	test	T13-01.08.02	A080640.000 A080640.040 A080640.020
SMC-8841	The SMC shall have the capability to generate detailed and summary user feedback analysis reports describing the results of analyzing user satisfaction queries, including, at a minimum: a. User information b. Type of transaction c. Satisfaction statistics d. User recommendations e. SMC recommendations	essential	test	T13-01.08.16	A080640.000 A080640.040 A080640.020
SMC-8860	The SMC shall have the capability to generate detailed and summary fault management reports describing the fault management of ground resources, including, at a minimum: a. Fault type and description b. Time of occurrence of fault c. Effect on system d. Status of fault resolution e. Fault statistics	essential	test	T13-01.08.01	A080640.000 A080640.040 A080640.020

Table 5-1. Release A Requirements Matrix

Req. Source ID	Requirement Text	Req. Categ.	Verif. Method	System Test Assignment	Acceptance Test Assignment
SMC-8880	The SMC shall have the capability to generate detailed and summary security compromise reports indicating security compromises of ground resources and facilities, including, at a minimum: a. Security compromise type and description b. Time of occurrence c. Cause of security compromise d. Impact on system e. Status of security compromise resolution f. Security compromise statistics g. Results of semission critical	critical	test	T13-01.08.07	A080640.000 A080640.040 A080640.020

6. Release B Requirements

6.1 Release B Capabilities

To be supplied in the Release B Release Initiation Review (RIR) submission.

6.2 Release B Requirements Matrix

To be supplied in the Release B Release Initiation Review (RIR) submission.

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7. Release C Requirements

7.1 Release C Capabilities

To be supplied in the Release C Release Initiation Review (RIR) submission.

7.2 Release C Requirements Matrix

To be supplied in the Release C Release Initiation Review (RIR) submission.

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8. Release D Requirements

8.1 Release D Capabilities

To be supplied in the Release D Release Initiation Review (RIR) submission.

8.2 Release D Requirements Matrix

To be supplied in the Release D Release Initiation Review (RIR) submission.

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